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Edited by J. A. Macdonald, Publicity Commissioner. *Philip Purcell, King's Printer*

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Map of Northern Manitoba Mineral Belt

Through the Mineral Belt of the North

Public interest in the articles published in the June and July numbers of the *Manitoba Public Service Bulletin*, regarding the mineral district to the north of The Pas, has been such that no further apology is required for still another instalment. The following is a report by Mr. J. A. Campbell, Commissioner of Northern Manitoba, of a trip made by him last month in company with Mr. F. H. Kitto, D.L.S., the latter representing the Natural Resources Intelligence Branch of the Department of the Interior, Ottawa. The trip covered practically the whole of the known mineral belt in which development work is proceeding, and gives further authentic information regarding the district and the progress being made. It is of special interest and value as giving a clear idea of the nature of the country and the means of transportation.

The map of the district published herewith is reproduced from a map specially prepared for the Public Utilities Commission to accompany the report of Professors R. C. Wallace and J. S. DeLury. The latter report was published in the June number of the *Manitoba Public Service Bulletin.*

The Trip

"We left The Pas on June 26th, on the 'Minasin,' one of the Ross Navigation Company's steamers, to which was attached a large barge for carrying ore and other freight. The first stage of the journey was up the Saskatchewan River and into Cumberland Lake through the Tearing River. Thence, after a brief stop at the old Hudson's Bay post at Cumberland House, the course was through Sturgeon Lake to the Landing, at the mouth of Sturgeon River, which point was reached about 7 p.m. of the 27th. There was manifested at that point considerable activity in connection with the loading of ore, construction of the Athapapuskow road and the departure of the various passengers on the boat to different northern points, for it is from this point that miners, prospectors, traders and other parties having business in the north country, branch off in various directions to their different destinations.

"It is from here that the road is being constructed to connect with Lake Athapapuskow. This road runs along the Sturgeon and Goose Rivers for about five miles, then crosses Goose River and takes a pretty direct course for the lake, the total distance being about 16 miles. We walked over the first part of this road, between seven and eight miles, and then took to the canoes, which had proceeded up the river under the guidance of a couple of Indian canoe-men. The road traversed is the one over which the ore from the Mandy Mine was hauled last Winter. It is very good in some places, but requires considerable grubbing and some ditching before it will be satisfactory as a Summer road. This work it is hoped will be done this Summer. On that portion of the road further on Messrs. Burman and Boyd, contractors, have a gang of men at work, their contract being to build and complete the road from the point where we left it to Lake Athapapuskow. Considering labor conditions, good progress is being made. When this road is completed there will be direct communication between the two lakes above mentioned, a very important link in the trans-shipment of freight.

"The land along the Sturgeon and Goose Rivers is of good quality and suitable for agricultural purposes. Several settlers already have gardens which are doing well. Surveyors are at work in this district, and four or five townships will be opened up for settlement at an early date.

Scenic Athapapuskow

"Goose Lake was negotiated in the afternoon and Goose Creek the following morning, when the great Lake Athapapuskow—the lake of many rocky islands—was reached. From a scenic standpoint this lake is not surpassed on the continent. The islands and shores are of rock formation, in some places rising to a height of over 150 feet. They are covered with a thick growth of spruce, poplar, jackpine and birch, the last mentioned being a particularly noticeable and pleasing feature. Ideal camping spots, graduating all the way from almost bare rock to dense bush, are abundant. This lake was crossed in the evening with the setting sun on the one hand and the rising moon on the other. For natural beauty this body of water surpasses anything that either of us had hitherto seen in any of his travels, and it is bound

in the near future to be a mecca for tourists. Besides, from a utilitarian standpoint, evidences are abundant that minerals abound on its shores and islands. Already a number of claims have been staked out, but no development work to any extent has yet been done.

"A particularly beautiful stream, known by the not particularly euphonious name of Schist Creek, is the connecting link with Schist Lake. A seven-mile paddle on the middle of the three arms of this lake brought us to the Mandy Camp, noted for its mining and shipment of 3,600 tons of sulphide ore last Winter. The makeshift and somewhat primitive machinery which was used in this work has been discarded and new modern machinery installed in a large frame power-house, which is now almost completed. We descended the shaft in approved fashion—on the bucket. This is now to a depth of 90 feet. When it reaches 100-foot level it is proposed to start drifting. Work on the power-house is being rapidly pushed to completion. As soon as this is done additional quarters will be erected for the men, these to include a reading and recreation room which will be a particularly attractive feature during the Winter months. It is intimated that at least 8,000 tons of ore will be got out during the season and placed at Sturgeon Landing for opening of navigation next Spring.

"A small stern wheel steamboat 48 feet long with a 13-foot beam has been completed, along with several barges. This performs a variety of useful functions, mainly the freighting of ore, supplies and timber. The company have also installed and are now operating a sawmill a mile or so from camp. Good spruce and poplar timber is available in the vicinity.

Flin Flon Camp

"From the Mandy Mines a walk over a so-called trail 'estimated' at 4 miles landed us at Flin Flon Camp. This is the most extensive sulphide body of ore yet discovered in the north. Two diamond drills were working on this property steadily last Summer, and they are still on the job, approximately 6,000 feet of drilling having been done already this year. Over 6,000,000 tons of sulphide ore have been proven up, and there is every indication that this will develop into the greatest ore body of its kind in America. General opinion seems to be that a railway will be built in from The Pas in due course and a smelter erected on the property. These enterprises will result in the opening up and working of a number of other claims in the district where mineral deposits have been shown to exist, and which, owing to their remoteness and the amount of money involved in handling them under existing conditions make their development by present owners now out of the question. The shore of the picturesque little lake is already dotted with cabins of those engaged in these development operations and of others who own or are interested in claims in the vicinity.

"We arrived back at the Mandy Camp that night, and next morning started south. It was a pleasant experience as well as an agreeable change to make the return journey down the lake on the new stern wheeler. A channel has been cleared in Schist Creek by removing the boulders therefrom, and the steamer and barge can now navigate this to Lake Athapapuskow, where the barge is transferred to the tug 'Notin' for transportation across the lake to the northern end of the Sturgeon Lake road. This channel, however, will not be navigable in low water, so the company have cut out a road a mile or so in length connecting the two lakes, and over this road a caterpillar tractor will do the needful in the matter of ore hauling.

"It is, therefore, a very much handled ore that reaches The Pas for transportation—mine, boat, tractor, tug, team hauling, Ross Navigation Company's steamer, another team haul, then finally the railway, but that kind of ore will stand all this labor and expense and still bring astonishing returns.

A Day Trip

"The return trip through Lake Athapapuskow was made in the daytime and revealed additional attractive features. By noon of the next day we had arrived at Cranberry portage, one and a half miles in length, connecting up with Cranberry Lakes. It is a good dry trail through bush with gradual rise and descent.

"The shores and islands of the lakes and rivers throughout the journey are all well wooded, but it is only at certain of the portages that an opportunity was given for getting an idea of the character of the country generally, especially in the matter of soil and timber. The region in the vicinity of Cranberry portage is characteristic of many parts observed. It is thickly wooded with spruce, birch, jack-pine and poplar, chiefly spruce, the trees being generally

from 8 to 20 inches in diameter. On an island in Reed Lake which we visited later the trees were much larger, one of them taking over 10 feet of tape line to go around the butt. There are stretches of good merchantable timber at different points through the area traversed, besides vast areas covered with trees suitable for pulp-wood. This timber is especially valuable for mining work. The Mandy Company promptly availed themselves of this opportunity by erecting and operating a sawmill, and the company operating the Rex Mine at Herb Lake expect to have a similar mill set up in a very short time, and these are simply precursors of many others.

Cranberry Lakes

"Cranberry Lakes consist of several small lakes joined by narrow channels. The general formation of their shores and islands resembles that of Athapapuskow, but these lakes, while quite picturesque, suffer somewhat in comparison with their more magnificent neighbor.

"It is several years since the discovery of sulphide ore was made in this vicinity. To the north a short distance are certain small lakes, on one of which, known as Copper Lake, a number of claims are staked. But, owing to discoveries having subsequently been made at more accessible points, attention has been mainly directed to these latter places. However, prospectors have just come out of the district and exhibited samples of sulphide ore which contain a variety of minerals, including silver. They state they have discovered an immense body of this ore, and careful assays are now being made to find out exactly the values as far as possible. A gentleman representing Duluth capitalists who has been looking around the district has taken an option on some of these claims, and it is probable some development work will be done shortly.

"Between Cranberry and Elbow Lakes there is a stretch of country that is different from any that has been visited. It is in the nature of low lying level valley varying in width from three quarters to about one and a half miles, and on either side is a high rock wall. The river meanders through this valley in a most tortuous manner, sometimes running along the rock on either side. At times the banks are grassy meadows, again trees bend over and dip their branches into the stream, and at almost every turn there is a pond of water lilies now in bloom. The whole course is of the kind the tired city dweller would picture in his (or her) mind for a restful summer canoe trip. From a practical standpoint it might be pointed out that this piece of country being composed of alluvial soil is very fertile, and might easily be made quite productive in the way of raising root crops and cattle.

Elbow Lake

"Elbow Lake is well named. After pursuing a course almost north, the route is now straight south, so that after canoeing 12 miles or so one is back within a short distance from starting point. In the Elbow River are numerous rapids and falls, making several portages necessary. The banks are of rock formation, well wooded. In many places the course has to be steered between boulders. Along the water's edge on each side is a fringe of long bright green joint grass with black tops. Altogether this river opens up a series of natural pictures worthy of special remark. Throughout the course are to be seen the location stakes of the prospectors, but only the edge of this district has been touched in this respect.

"Reed Lake was traversed in the afternoon. It is one of the larger lakes of the series, and the scenery to some extent resembles Athapapuskow, but not so diversified. It was an afternoon like what one reads about in glowing descriptions of sunny Italy, with blue skies, placid lakes and dark green foliage. All the notable features of such a description were there that afternoon in one of northern Manitoba's lakes. There are several settlers at different points on the lake, mainly engaged in the fishing industry, and raising vegetables as a side-line. From Reed Lake to Wekusko or Herb Lake the main feature is Sandy Lake, so called presumably from the fact that there is a small piece of hard sand beach at the end of the portage. Otherwise the shore formation is similar to that of the other lakes, only more regular. The discovery of sulphide ore on the south shore of this lake was made some time ago, and on the north shore for a distance of about a mile there is an immense deposit of red granite. The waters of this lake are discharged into Herb Lake by a short river, at the mouth of which are the Wekusko Falls, a series of falls and rapids in which there is a descent of 45 feet, and which therefore offer excellent facilities for development of power. The journey across Herb Lake, a distance of about seven miles, was made in the evening, and we arrived at the camp of the Northern Manitoba Mining and Development Company shortly after 9 o'clock, just at sunset.

Moosehorn and Rex

"The changes which have been wrought in the eastern shore of this lake during the last year are very noticeable. On a number of properties active development work is taking place. The Moosehorn and Rex claims are now in the category of real mines. On the Moosehorn, otherwise known as Northern Manitoba Company's property, a complete mining plant has been erected. The shaft is sunk to a depth of 80 feet, and the vein has widened out from 15 inches on the surface to 30 inches and the ore values have increased with the depth. One shaft on the Rex is down 117½ feet, and drifting is being commenced at 110 feet level. The mean width of the vein is 49 inches and the assays through-out have averaged $36. Mr. Neal, the chief engineer for Makeever Brothers, when on a visit to the mine in May, found conditions so satisfactory that he immediately ordered a complete new outfit of mining and milling machinery. Most of this is now at The Pas, and Mr. Neal is back to superintend its transportation to the mine and the installation there. The main items in this shipment are as follows:

"Ten-foot Lane mill with a capacity of 40 tons per day.

"Amalgamating plates.

"Two Deister Overstrom concentrating tables.

"The engine is 55 h.p., and there are two 60-h.p. return tubular boilers and 390 cubic feet air compressor with modern equipment of air drills. In addition, an assay office will be established and further buildings erected to accommodate a crew of 40 or 50 men. There is also being brought in as a necessary adjunct a portable sawmill and equipment and two gasoline launches.

"The Kiski-Wekusko claims have been thoroughly prospected by stripping and at least 20 veins uncovered. A shaft has been made to a depth of 53 feet. On the completion of a wagon road to the railway, machinery for this mine, which has already been purchased, will be brought in.

"Work is progressing on the Elizabeth and Bingo claims. The former is one of the best looking veins on the lake, and while the vein in the latter is narrow, this is compensated for by its extraordinary richness. The owners of other claims in the district, such as the Ballard, Le Roi, etc., are getting satisfactory results for the work performed. The McCafferty claims, some distance farther north, have been attracting considerable attention, and a representative of certain Ontario people has been on the ground for some time and is negotiating a deal which has every appearance of being closed out.

"A recent discovery which is attracting particular attention is that of the Syndicate claims on the other side of the lake right across from the Rex mine. A number of prospectors and miners have visited this property, and while no work of any moment has been done thereon, they are practically unanimous in reporting that surface indications show a particularly rich vein, 3 feet or thereabouts in width, and well defined.

Lake Terminus

"The mining district is about 10 miles from McKay's Landing at the foot of the lake, where there is a fine sandy beach backed by a grove of big trees. This is the lake terminus of the Gordon road from mile 82, H.B.R., a distance of about 11 miles. The road has been under construction for some months, and is now nearing completion. The laying of about 1,500 feet of corduroy and some drainage are the main items yet to be attended to. The completion of the road will be a great boon to the mining district, as quantities of machinery and supplies are now awaiting this event. The country through which the road passes has various characteristics. About two and a half miles is flat limestone, almost like a pavement. There will be nearly two miles of corduroying through muskeg. The remainder is clay and moss land.

"Altogether there is a considerable quantity of land in the vicinity of Herb Lake which can be brought under cultivation, with excellent results. There are now a number of small gardens and patches of potatoes. At one of the mining camps we had the pleasure of eating fresh lettuce and radishes grown on Campbell's Island, a short distance from the shore. The growth of these has been exceedingly rapid and the quality was of the very best. Mr. Campbell has a considerable clearing and a diversified crop of garden stuff, all doing well. G. Lacroix, of mile 82, H.B.R., has an acre of potatoes and from present appearance he is entitled to expect a record crop.

"After walking over the new road we were fortunate in catching an extra train on the railway, and arrived back at The Pas on the evening of July 10th, having made the round trip in exactly two weeks."

The Rice Lake Gold District

Report of Prof. Robt. C. Wallace and J. S. DeLury, Department of Geology and Mineralogy, University of Manitoba

Location and Means of Access

The original discoveries were made in Rice Lake, which has consequently given its name to the whole district. There are in all, however, four areas which are attracting considerable attention—(1) Rice Lake; (2), Gold Lake and vicinity; (3), Long Lake and Half Way Lake; (4), a belt north of the Hole River. These areas lie approximately in a belt with a general northwesterly and southeasterly trend, 10 miles in width, and 40 miles long, the northwesterly end of the belt being 16 miles east of Lake Winnipeg.

During the Summer months access to the camp is obtained from either the Bad Throat or Hole River, which are reached by boat from Selkirk. In the earlier days of the camp the Hole River was utilized, but during the past three years the Bad Throat River has been used almost exclusively. On this river the portages are numerous, and with heavily laden canoes a journey of two to three days is necessary to reach the camps. In Winter provisions and machinery are hauled across Lake Winnipeg from Riverton to the mouth of the Bad Throat River, and thence by Winter road to the camps. Difficulty in transportation is a serious obstacle to the development of the whole district. Emphasis will be laid on this feature in a later paragraph.

Resume of Geological Features

The mining district is situated in a comparatively narrow belt of sediments, greenstone and porphyry, which follows the trend of the Bad Throat and Hole Rivers, and which is bounded on the north and south sides by granite. It is unnecessary to enter in detail here into the classification and age of these formations. Of chief importance is the fact that a central body of granite between Gold Lake and Long Lake has intruded all these formations, sending out quartz veins into porphyry and greenstone, and itself showing quartz veins of the same age. This granite is the latest rock formation in the district, and from it has proceeded not only the quartz, but also the gold and sulphides which the quartz veins contain. It is a feature of rather special interest that quartz veins in this granite, more than a mile from a contact, themselves show very promising gold values at the surface. In this district development has not yet proceeded to any depth. It is rather unusual in districts of similar geological structure to this one that a granite, although the parent body of the gold which occurs in the surrounding rocks, should itself show values in the quartz veins which traverse it.

The Quartz Veins

The veins follow almost without exception the trend of the surrounding rock, which pursues approximately a southeasterly and northwesterly direction. In the originally developed district, that around Rice Lake, the veins were prospected in porphyry and in sediments. In Gold Lake they occur almost entirely in porphyry, while at Long Lake they were originally followed in porphyry, but now in granite and in diabase. The character of the veins varies only very slightly with the variation of the country rock. They follow well defined fissure or shear zones, and may be traced not infrequently for a mile in length. As a rule they are narrow, and the few wide lodes which occur carry low values, if any values at all. This is a feature which has been found not to interfere with the success of some of the camps in Ontario, which give indication of developing into flourishing mining centres, but it renders necessary the continuation of values to very considerable depths before success can be assured. The veins are well mineralized, with sulphides of iron and copper, to a minor extent with sulphides of lead, zinc, molybdenum and arsenic. The highest surface values in gold occur where copper sulphides are well distributed in the quartz, as for example at the Moose Mine, and in the granite veins south of Halfway Lake (Long Lake district). It is improbable that the sulphides of copper will continue in depth, and it is a matter of first importance to determine whether the gold values will continue with the iron sulphides at deeper levels. It is encouraging to find that the veins are very well defined, easy to follow, and have sharp walls, and more particularly that the mineralization is the result of very pronounced shearing. As the shearing is widespread there is at least a reasonable promise that the values will continue below surface levels.

Development

Notwithstanding the fact that mining activity was initiated over four years ago, the stage of development reached as yet is rather immature. Most work has been done in the Rice Lake area, where the Gabrielle, Independence, Big Four, Gold Cup, Gold Field, Albany and Ranger are situated. Depths of from 50 to 100 feet were reached, and a certain amount of drifting and cross-cutting has been done. Presumably owing to lack of funds none of these properties are now being operated, and the original Rice Lake district has been temporarily abandoned for the Gold Lake and Long Lake fields. In some cases it is unfortunate that the money spent in development has not been expended in stripping, and in following the veins in depth, rather than in sinking vertical shafts and equipping with machinery before sufficient information was obtained with regard to the value of the ore bodies. In the Gold Lake district the most extensive work has been done on the Moose, Gold Pan, Gold Seal, Pilot and Nevada properties. Of these properties, the Moose alone is being operated at the present moment, and the Moose property is the only one in which underground development work is being done in any of the four districts at the present time. At the Moose and Gold Pan, depths of over 100 feet have been reached Both these properties are in porphyry. To the depth to which development has proceeded in these mines there is comparatively little change in the width of the quartz veins. The rich showings in the Gold Pan were obtained at a depth of 115 feet, in the vicinity of a heavy diabase dyke which intersected the quartz vein.

There is no very pronounced activity in the district at the present time—not more than 40 men operating in the whole district. The number will be very considerably increased during the latter part of the Summer, but there is no indication that a rush is to be anticipated this season.

Transportation

Real development is very seriously hampered at the present time owing to lack of transportation facilities. Apart altogether from the fact that the cost of transportation is very high, mine managers find it difficult to obtain good miners and to retain them under the conditions which at present prevail. Mail service may be a minor consideration, but it is one of importance, and the mail service into the district is extremely poor. In our opinion, there is nothing in the development of the camp to justify a railway at the present juncture, unless the railway has some other and more important function to serve. A wagon road, is, however, a necessity, and the present position of the camp would justify the expenditure involved. Such a road would require to be constructed for Summer as well as for Winter traffic. Unless a road is built in the immediate future, development will be seriously arrested, and the men at present in the district will be decidedly disheartened in their efforts. It is earnestly hoped that the steps which the government are at present taking will result in the construction of a serviceable road into the district.

Special Features

The whole country is covered by staking ("blanketed") to such an extent that prospectors have to go somewhat far afield to reach unclaimed territory. The development is by no means commensurate with the staking, and the special provisions under the Moratorium Act render it unnecessary at the present juncture that even the normal assessment work be done on the claims. This has led to a considerable amount of speculation in claims, with apparently no intention to develop. While this situation is by no means abnormal in mining camps, it is unfortunate in this instance, as the district, together with the whole of the northern territory of the Province, stands in need of a much larger number of experienced prospectors from the older mining fields of Canada, and such prospectors are with difficulty induced to enter a district which is blanketed.

There has been a certain amount of criticism of the fact that American capital is being utilized in the district. Judging from the experience of the camp, there is no doubt that the activity of responsible American firms should be welcomed, if one is concerned with the ultimate welfare of the camp. It is decidedly preferable, where such a course is possible, that options should be taken on favorable properties by strong mining companies, and sufficient funds provided to develop to a stage where it is possible to decide whether the prospect is to be a mine, than that appeal be made to the public for funds before any information has been obtained about the veins. It would be greatly to the advantage of

the district that good companies should now take hold of some of the prospects in the Long Lake district, and spend $20,000 to $30,000 on each property in order to prospect the pay shoots in the veins. It is not unreasonable to hope that the district will develop in this way in the near future.

Estimate of the Present Value of the Camp

The whole district must be considered as a prospect camp, in the early stages of development. There is nothing as yet to indicate, if one judge from the character of the quartz veins, and the results of development work already done, that there will be any very large mines in the district. Several successful mines may, however, develop on a smaller scale, and if the district receives sufficient encouragement it may prove a valuable asset, directly or indirectly, to the Province. The best opportunities appear to lie in the central granite or in the porphyry near the contact with the granite. The quartz veins are somewhat larger in the granite than in the porphyry, but on account of the origin of the gold and associated rock, values may be found to be more persistent in depth in the porphyry. In any case, it is essential to the ultimate welfare of the district that development proceed along sane lines, and that a sufficiently clear idea of pay values in lateral extension and in depth be obtained before any attempt be made to install expensive milling machinery.

APPENDIX: GEOLOGICAL FEATURES

In an earlier investigation Moore* believed that the quartz porphyry which is so prominent a formation in the Rice Lake district, and in which so many of the gold quartz veins occur, was one of the earliest geological formations here represented, and Wallace† adopted the same view. At that time the central granite batholith had not been observed. The discovery of this granite, and the anaylsis of the intrusive relationships that are clearly disclosed between Long Lake and Halfway Lake, necessitate a revision of the conclusions formerly arrived at. The following facts have been established.

(1) The central granite shows in places intrusive relationships into the porphyry, elsewhere grades imperceptibly into the porphyry. The mineralogical composition of the two rocks is identical; the differences are such structural differences as distinguish plutonic and intermediate effusive phases. It is often a matter of difficulty in the field to decide whether certain phases should be delegated to the granite or to the porphyry types. The inevitable conclusion is that the granite and the porphyry originated from the same magma, that the granite represents the more deep-seated, and the porphyry the less deep-seated aspect of the magma on crystallization, and that the intrusive features, where they occur, are not more extensive than are permissible in the interaction of the lower on the higher zone of one and the same magma during the process of crystallization.

(2) The porphyry intrudes ellipsoidal greenstones and a banded iron formation (sedimentary). The relationship between the greenstone and the iron formation was not clearly defined, but the iron formation is considered on structural grounds to be later than the greenstone. The greenstone presents all the features that are characteristic of Keewatin basic lavas elsewhere, and may safely, on grounds of analogy, be classed as Keewatin. The iron formation of the Long Lake district is probably of late Keewatin rather than Huronian age, as jasper pebbles, presumably derived from this formation, occur in a conglomerate in the eastern part of the field which has many resemblances to the Temiscamian conglomerate of Ontario. While the structural relationships do not provide conclusive proof that the porphyry and granite are of Algoman age, they at any rate place these phases as post-Keewatin.

(3) Granite masses flank the lavas and sediments of the Hole River and Bad Throat River basins to the north and south. These granites are intrusive into the conglomerates which appear in the eastward extension of the belt. The direct connection between these major granite masses and the central granite from which the good veins have proceeded has not been traced. Their relationships to the porphyry along the northern edge of the belt are similar to those of the central granite to porphyry of the Long Lake district.

(4) The infilling of the gold bearing quartz veins took place after the central granite

* Geol. Surv. Can. Summary Report 1912, p. 262.

† Trans. Can. Mining Inst. 1913, p. 538.

had consolidated, and had been subjected to lateral shearing. The shearing was, however, produced by the movements which were connected with the last phase of the intrusion. Some of the gold in the veins was precipitated during the primary infilling of the veins, but the major part of the gold was formed at a still later period, when the quartz was fissured and the narrow cracks thus formed were again infilled with quartz and gold. A notable feature is the fine-grained character of the gold, both in the original and later precipitations, and the absence, generally speaking, of direct connection with the sulphides.

The practical issue in connection with the granite and porphyry from the mining standpoint is the following—if the porphyry is a surface phase of the granite, as above indicated, the quartz veins which originated in the granite and extended upwards into the porphyry would be expected to have greater depth in the porphyry than in the granite. It has already been shown to be an interesting feature of the district that strong veins occur in the granite as well as in the porphyry. They are well defined, and well mineralized, but their extension in depth is more problematical than in the case of the surface zone veins.

July, 1916.

Sow Thistles Killed by Summer-Fallow

In every portion of Manitoba where the Perennial Sow Thistle is well distributed, it has, this year, been conclusively demonstrated that this weed can be almost, if not entirely, eradicated in one season by the summer-fallow method. In almost every infested district the Weeds Commissioners find good, and in some places extra good, crops of wheat growing on fields that were condemned for thistles, and treated to black fallow last year. In a few cases almost the best crops in the district are upon fields that, because of weeds, were plowed up as being of no value and summer-fallowed in 1916.

On the other hand, it is being noted universally that where the thistles are well established, the grain crops are so starved out, that in many cases, even if they were harvested, they would scarcely pay for the work of threshing. The owners of a great amount of land are being given notice this season that thistle infested fields must be given cleaning treatment next year. Several prosecutions also have occurred this year because of neglect of weeds upon vacant lands, hopelessly dirty grain fields and neglected summer-fallows.

New Bulletin on Cookery

In these days of food control it does no harm to remember that there are different ways to waste food, and that one of these ways is through improper preparation. Economy and proper cooking go hand in hand.

To place before Manitoba women the best possible information on the subject, the Manitoba Department of Agriculture has published a new 56 page bulletin entitled "Cookery Recipes." This bulletin has been compiled by Miss Elizabeth Crawford, who for the past two or three years has been engaged as cookery demonstrator for the Extension Service of Manitoba Agricultural College. Miss Crawford is not only a holder of the National Union Cookery diploma, but through her experience before hundreds of audiences of Manitoba housewives she has come to know somewhat intimately what lines of cooking are in the most practical demand in the Canadian West. The bulletin contains 291 recipes covering the following classes: Soups, fish, cheese, eggs, meats, meat substitutes, meat and fish sauces, vegetables, dried fruits and vegetables, pastry, desserts, pudding, sauces, breads and cereals, small cakes, larger cakes, frostings and icings, salads and salad dressings, sandwiches, invalid dishes and candies.

The bulletin has been so arranged that any recipe may be read throughout without turning a page of the book. This is a point that every cook will appreciate.

Requests for a free copy should be addressed to the Publications Branch, Manitoba Department of Agriculture, Winnipeg.

Star Lake Mineral District in Eastern Manitoba

Report of Prof. Robt. C. Wallace and J. S. DeLury, Department of Geology and Mineralogy, University of Manitoba

Star Lake is a small lake west of West Hawk Lake, near the eastern boundary of the Province, and immediately south of the Canadian Pacific Railway main line. Star Lake is about 6 miles southwest of Ingolf, the first station on the Ontario side of the provincial boundary line. The area in which the greater part of the development work has been done comprises a belt extending from the south and west side of Star Lake southwestward and southward to Falcon Lake and Beaver Lake, an area 4 miles long and 2 miles wide (maximum measurements). At an earlier period a certain amount of prospecting was also carried on along the west shore of Hawk Lake, one to two miles north-east of the district under consideration, but work was discontinued here many years ago. The main camp, formerly known as the Penniac Reef Gold Mines, is situated about one mile south-west of the south end of Star Lake.

An examination of this area and of the southward prolongation of the belt along the Greater Winnipeg water district pipe line was made during the latter part of May and the earlier part of June. Acknowledgment is here made of the able assistance of Mr. J. S. DeLury, of the Geology Department of the University of Manitoba.

Means of Access

Comparatively speaking, transportation presents relatively little difficulty. The district is only six miles distant from the railway line, though the lake route is about eight miles long. Wagon roads are utilized between Long Pine Lake, on which Ingolf is situated, and West Hawk Lake, and between West Hawk Lake and Star Lake, and may be used for both Summer and Winter traffic. In Summer the lake transportation is by gasoline launches. In Winter there is a fairly straight road from the mines to Ingolf over the lakes and portage roads.

Geological Features

The more important geological features are shown on the accompanying map. There are two somewhat extensive granite areas, one forming the northern field and the other the southern field of the map, representing portions of the very extensive pink granite formation of the Winnipeg River basin. Enclosed within the granite is a tongue of dark green Schistose rock which is in part of sedimentary and in part of igneous origin. It is in this latter formation that prospecting has been carried on and mining operations have been initiated. The study of this formation presents considerable difficulties owing to the fact that the fine-grained quartzites of the sediments and certain of the igneous types are practically indistinguishable in the field; and in many places the gradation from the sedimentary to the igneous is insensible. Other sedimentary types occur, however, which present no such difficulties. A band of conglomerate over a mile in width strikes southwestwards from Star Lake and dips rather steeply towards the northwest. It contains squeezed pebbles of sugary quartz, banded quartz, and fine-grained or coarse-grained greenstone. On this formation, and near its southern edge, the Penniac Reef Mine is situated. Another very distinctive sedimentary formation was found about half a mile south of the south end of Star Lake. This is a typical "iron formation"—banded magnetite, haematite and quartzite, without, however, the jasper bands which normally occur in such iron formations. Pebbles of the iron formation are found in the conglomerate. The igneous types in this formation are fine-grained and coarse-grained diabases, frequently showing pillow structure.

Within this tongue of dark green sediments and igneous rock, there appears an oval boss of grey granite, from which veins penetrate the surrounding rock. It was the irruption of this granite mass which gave rise to the mineralization of the surrounding sediments and greenstones. From the economic standpoint, therefore, this is the important formation in the district. The southern boundary of the granite has not been carefully defined; but where the granite has been mapped to the north, east and west, it shows intrusive relationships into the dark eruptives and sediments. Moreover, the sediments are highly impregnated with magnetic sulphide of iron, pyrrhotite, with arsenopyrite, and to a minor extent with pyrite, in the vicinity of the granite; and the quartz veins which carry the gold values have also been derived from the magma from which the granite was formed.

The general succession in the district may be summarized as follows:

(*a*) Eruption of basalts, in part ellipsoidal.

(*b*) Deposition of "iron formation."

(*c*) Irruption of pink granite.

(*d*) Deposition of quartzites and conglomerates.

(*e*) Formation of pink granite at very considerable depth.

There is some doubt as to the place of the pink granite in the table. On the Ontarian side of the boundary line it has been classed as Laurentian, which corresponds to the place that it occupies on the above table. This is, however, the same pink granite that occupies so prominent a place west of the Winnipeg River basin. It is peculiarly fresh and free from the effects of strain, and shows inclusions of a similar grey granite to that south of the Penniac Reef Gold Mine. There is consequently a probability that the granite may be even younger than the grey granite which has mineralized the area, and that both granites may be referred to the Algoman intrusive stage.

Quartz Veins

The area of chief economic importance is the somewhat narrow rim west, north and east of the oval map of granite as shown on the map. This is a typical fahlband, a band of rocks extensively impregnated with sulphides. To such an extent is this the case, that the exposed rock surface is normally deep red. The main sulphide is pyrrhotite. Arsenopyrite occurs quite commonly, while pyrite is found further from the granite area, sometimes in unusually large crystals. The sediments are affected to a somewhat greater extent than the greenstone eruptives; and of the sediments, the quartzites more than the conglomerates. From the granite there have been thrown out irregular veins, which are in places quartz veins, and in places quartz-felspar veins. The quartz has been mainly derived from the granite magma, but apparently in part from the quartzites and conglomerates by lateral secretion. The walls are consequently indefinitely defined, and the veins very difficult to follow. This is especially the case where the quartz is dark-grey, approximating in color to the quartzitic country rock. This difficulty is experienced in the Penniac Reef property, and is well illustrated in tracing the quartz veins in the open cut. When the veining is through greenstone, as in the properties near Falcon Lake and Mud Lake, the walls are more clearly defined.

While the direction of the strike of the rock has had some influence on the attitude of the veins, they are found quite frequently to cut across the strike. The strike of the mineralized rock in the Penniac Reef district is 35E, and the dip fairly sharply towards the north. The vein that is being developed in the Penniac Reef is followed southwards towards the granite. It disappears in the muskeg which intervenes between the granite hill and the "reef." A feature of the veins is the tendency to break into stringers enveloping considerable areas of highly silicified country rock.

The mineralization of the quartz veins is very similar to that of the surrounding rock. The sulphides are fairly evenly distributed throughout the veins. Pyrrhotite and arsenopyrite are the important sulphides, the pyrrhotite frequently occurring in lens shaped clusters. Magnetite occurs occasionally as though replacing some other oxide of iron. The microscopic study of numerous sections of the gold-bearing quartz by Hanson has demonstrated that the gold occurs to a large extent free from the sulphides, but has been introduced into the vein at great depths simultaneously with at least part of the sulphides. The presence of garnets and felspars in close association with the gold is an unusual feature which could be possible only under such conditions. It is owing to this same fact that the walls of the veins are indefinite, and there is frequently a gradual transition from the sediment to the vein.

Gold Values

During the earlier stage of the development work on the Penniac Reef, the expectation was entertained that the whole "fahlband" could be worked as an open quarry, the high values in the quartz veins raising the average value of veins and country rock to such a figure that the whole could be operated at a profit. It was hoped that in this way a mineralized body of rock at least 200 feet wide could be operated. Careful sampling has shown, however, that while the country rocks, where it is impregnated with sulphides, undoubtedly carries values in gold, such values are too low to make it possible to work the deposits as a whole. Attention must

consequently be confined to the veins themselves. The veins are irregular, both in thickness and direction, and frequently send out narrow stringlets into the surrounding rock. The gold values are in places very high. The veins are narrow, and the pay values apparently continue across the vein, and even into the country rock. While the sulphides carry values, the microscopic examination of the quartz veins has shown that the gold occurs mainly free.

Reports have frequently been made of the presence of platinum in the ore from the Penniac Reef properties. Owing to the presence of pyrrhotite in such large quantities, one might account for this on the hypothesis that platinum arsenide (sperrylite) was associated with the pyrrhotite. So many assays have, however, failed to establish the presence of platinum that its occurrence in the district must yet be considered problematical.

Stage of Development

One company, the Penniac Reef Gold Mines, Limited (now the Star Lake Gold Mines, Limited), started operations over five years ago. A shaft has been sunk and numerous trenches and pits have been dug, exposing the veins in a fairly thorough manner.

The vein followed by the shaft is considerably broken into stringers, but shows a total width of at least six feet.

Elsewhere in the district development work has been confined to stripping and trenching and to the sinking of pits. A line of claims has been prospected from the west end of the Penniac Reef claim southwestwards along the strike to Mud Lake and Falcon Lake, and at the south end of this chain, a good deal of work has been done on Boyce's claims, where the quartz veins, carrying large crystals of pyrite, cut through a highly mineralized greenstone. Immediately south of Star Lake, also, in this vicinity of the "iron formation," pits have been sunk in a sulphide belt, where the sulphide ore shows on the weathered surface indications of the presence of nickel.

At the present moment work is practically at a standstill in the district.

Resume

In the Star Lake district a mineralized belt, striking southwestwards and swinging further south in its westward extension, is very extensively impregnated with sulphides of iron and arsenic. It wraps round a granite boss from which granite veins, grading off into quartz veins and stringers, have penetrated the sulphide zone. Low gold values are found in the whole zone, but the quartz veins carry in places high values. The veins are very irregular, and difficult to follow. A good deal of surface work has been done over the whole fahlband. The only property equipped with machinery and buildings is the Star Lake Gold Mines, Limited, formerly the Penniac Reef Gold Mines, Limited.

An iron formation occurs in the eastern part of the zone, in which the magnetite and haematite are too impure to be of economic value. Indications of nickel occur in the pyrrhotite of the sulphide impregnation, and the presence of platinum has been reported, though not definitely established. The extensive sulphide impregnation, while in itself not economically of value, is, however, of such a character as to give some ground for the expectation that certain of the quartz veins in the district may yet be successfully mined for gold.

October, 1916.

Blackleg in Cattle

The Department of Agriculture has had complaints of loss among cattle from blackleg, and this is just the time of year to be on the lookout for it. The blackleg germ, when once introduced into a district, lives in the soil, and is liable to attack animals, especially young cattle, at pasture. The symptoms are quite characteristic, the first usually being sudden lameness, in which one of the legs is dragged stiffly. Local swellings develop rapidly, and these produce a crackling sound when pressed. The disease is almost always rapidly fatal.

The Department reminds the public that although curative treatment after infection is not practicable, prevention is possible through vaccination. This year a large amount of blackleg vaccine was used in all the Western Provinces because of the publication last Winter of a circular on this subject. Farmers with cattle at pasture should get a copy of this circular from the Publications Branch, Department of Agriculture, Winnipeg, or should send direct for the vaccine and circular to Dr. C. D. McGilvray, Dominion Government Veterinary Inspector for Manitoba, Boyd Block, Winnipeg. In a single day lately Dr. McGilvray's office received orders for more than two thousand doses of blackleg vaccine.

Government Purchasing Department

An independent purchasing department, separate from the department of the Comptroller-General, but working in conjunction with it, was instituted by the Government some time ago and is now in full control of all purchasing for government departments and institutions. Generally speaking, the organization of the new purchasing department follows closely along the lines of similar departments maintained by the big railroads and other public service corporations whose annual purchases run into millions of dollars. It is independent of all other departments and officials.

The purchasing department was planned to ensure two important considerations. First, that protection is given the Province that all commodities bought are supplied at a fair and reasonable price after full consideration has been given to competitive tenderers as to price, quality, quantity, time of delivery, etc.; second, that before any order can be issued for any supplies or any liability can be incurred, it is ascertained that there are funds available in the specific appropriation affected to liquidate the liability which is created when the order is issued. From the standpoint of the supplier this latter is very important, as it ensures that whenever the goods are delivered in accordance with the official order his account will be paid.

The new system is designed to prevent the "patronage" system, and its very mechanics are such as to give every promise that this end will be attained. The purchasing agent and he alone considers the several quotations received on each requisition for supplies. A full record of all tenders is required to be kept which must indicate the reason why any order is given to any particular tenderer.

Details of the System

The general principles of the system may be summarized:

The department requiring supplies issues a requisition showing the quantity, quality and full description of the article or articles required, and the departmental appropriation to which the amount of the purchase should be charged. This requisition must first be approved by the Department of the Comptroller-General to show that there are funds in the appropriation affected sufficient to cover the amount of the purchase. The requisition must also have on its face the authority of the Minister of the department affected that the expenditure is deemed advisable. Immediately on receipt of the requisition, thus certified by the Comptroller-General, the purchasing department sends out quotation forms to the different firms that can supply the commodities enumerated. This quotation form is an exact copy of the requisition, and the unit price and the total amount is filled in by the tenderer, who then returns the quotation direct to the purchasing agent. It must give full details as to delivery, etc. When the quotations are received by the purchasing agent, they are tabulated, and in cases where samples are submitted these are carefully examined. The purchasing agent having decided which of the tenderers has given the Province the fairest offer, the official order is then issued to that tenderer. When the order is made out it has then to be sent with the necessary information to the Minister of the department affected for his signature, which is required by statute. When the Minister has signed the order it is mailed direct to the successful tenderer.

Invoices for the goods, when delivered, are sent to the Purchasing Department, which takes the necessary steps to see that they bear the certifications of the department receiving the goods, as to delivery, quantity and quality. Quantities are also further checked by separate daily reports of goods received which every Government institution is required to mail to the office of the Comptroller-General. Invoices are required to bear the number of the purchasing department order, and are compared with the duplicate of the order to ensure that every detail is in conformity. The purchasing agent then certifies that the invoice is in accordance with the order issued by him, and it is then passed to the department of the Comptroller-General for payment.

So far as is known, Manitoba is the first Province in Canada to instal such a purchasing department, but it is understood that British Columbia is making arrangements to organize a department on similar lines.

The purchasing department has a complete separate staff and equipment, and is located in offices in the new Parliament Buildings. Its permanent records of all purchases and its system of keeping track of current trade prices of all commodities purchased as a check on quotations have relieved the various departments of a considerable amount of work, which is thus centralized. One valuable feature of the work of the new department is the standardization of certain lines of purchases, resulting in a considerable economy to the government.

Marketing the 1917 Wool Clip

The wool assembled by the Manitoba Department of Agriculture, to be disposed of under the co-operative wool marketing plan, was sold August 16th to P. V. Lewis, Lethbridge, Alberta, who was acting as agent for J. Kosland & Company, Boston, Mass.

The history of co-operative marketing of wool in Manitoba shows how this line of work is appreciated by the sheep owners of the Province. In 1915, some 69,000 lbs. of wool were assembled and disposed of at an average price of 26¼c per lb. In 1916, 154,000 lbs. reached the warehouse, and brought an average price of a trifle over 32c per lb. This year approximately 180,000 lbs. reached the Department, which brought an average price of 58c per lb., practically 100 % increase on prices obtainable a year ago.

Perhaps the feature of the system of handling grain in Canada, which has made it superior to that in vogue in any other country, is the equitable grading system. This insures the consignee fair value, based on the quality of the goods received. The same principle is practised in the co-operative marketing of wool. The wool is received in the Department's warehouse and weighed in the presence of a representative of the Live Stock branch of the Dominion Department of Agriculture, and the clerk in charge of the warehouse, who represents the Provincial Department of Agriculture. A record is made in triplicate of the grades of wool received, number of pounds in each grade, character of bags in which it was shipped, and the general condition in which the wool was received. A copy of these records is forwarded to the owner of the wool, when settlement is made, setting forth the price paid for each grade of wool.

Better Handling by Farmers Needed

While gradual improvement has been shown in the way farmers handle their wool for shipment, a great deal can yet be done to improve the quality of the wool, and to eliminate the loss which the sheep owner suffers as a result of negligence in the management of his flock, and the subsequent handling of the fleeces. Wool containing straw, etc., is all graded "rejects"; likewise wool tied with binder twine, the reason for which is that the fibres from the binder twine get mixed with the wool and will not take dye; hence the occasional streaks which appear in cloth made from wool containing a mixture of the above mentioned fibres. Another factor influencing the quality of wool is the physical condition of the animal. Wool grown during a period of sickness has a weakness in the staple, causing it to break during the process of combing, and consequently lessens the value of the fleece. Sand and dirt is also prevalent in the wool where sheep have been grazing on fallow land. This causes the wool to suffer in brightness and weakens the fibre when alkali is present.

Tags sell for a third of the average price of the standard grades. There is no advantage to the owner in shipping in tags to the Department, because the grader removes the tags, which necessarily causes the removal of pieces of wool which in the absence of tags would grade as "coarse," and be worth, on the basis of present prices, 57c a pound, whereas tags only bring 20c. However careful the grader may be in this operation a certain loss is unavoidable; therefore, the suggestion is that the tags should be removed by the shears before the clip is commenced. A still better way would be to have the lambs docked and by periodically removing any accumulation of dirt to avoid entirely having any tags.

As soon as the wool was received in the warehouse and the grading done, an advance cheque was sent on the basis of 30c a pound. At the time this arrangement was made wool was selling in the province at prices ranging from 35c to 40c a pound, and owing to the fact that occasional shipments are received which contain a large percentage of the lower priced grades, it was thought that 30c per pound advance would be quite liberal.

As soon as the Department learns the approximate quantity of wool expected, every woolen mill and wool dealer known is communicated with, inviting closed tenders and setting forth the regulations governing the sale. This is the practice followed by the large wool firms in the United States. Owing to the possibility of the Dominion authorities and the Federal authorities in the United States placing a maximum price, the wool market has suffered a temporary slump and there is not the keen demand for wool now that there was some two months ago. The Department did not receive a single tender from a Cana-

dian firm. This has been largely the experience of other Provinces where co-operative wool marketing is carried on and the majority of the sales have been made to United States firms.

While the method of handling wool co-operatively is not perfect, and improvement is made from year to year, there is no doubt that this co-operative work is largely, if not wholly, responsible for the increased prices paid in country points for wool not shipped to the Department. For the continuance of the successful co-operative marketing of wool there are two prime essentials. The first is, sufficient patronage from sheep owners to guarantee enough wool to make the scheme possible, and second, the wool must be received at the warehouse in the minimum space of time possible to enable grading, because once the wool begins to reach the warehouse, it becomes necessary to engage a staff, place insurance, etc., and all other incidental expenses are increased as the length of time the work is in operation is protracted. Heretofore one cent per pound has been practically sufficient to care for incidental expenses and it is expected that this will be nearly sufficient this year.

Farming Competitions

The summer-fallow competitions being conducted in Manitoba this year in connection with the Agricultural Societies have attracted a large number of competitors. This is the first year in which such competitions have been put on an organized basis under the Agricultural Societies Act of the Province, and it is gratifying to know that more than 300 farmers have entered fields ranging from 10 to 25 acres each. The societies holding the competitions are Dugald, Sanford, Gladstone, Miniota, Elkhorn, McAuley, Virden, Souris, Carberry, Reston, Giroux, Woodlands, Warren, and Rossburn. One feature of this work will be automobile tours at the time of the last three inspections, when the farmers of each district will examine the summer-fallows, and also other matters of interest in the farming experience of the community.

Another competition that has won much attention this year is the standing crops competition, which is being carried on by the following societies: Hamiota, Binscarth, Russell, Shellmouth, Reston, Giroux, Miami, Woodlands, Warren, Stonewall, St. Jean, Selkirk, Kildonan and Gladstone. In this competition the entrants have each from 5 to 10 acres of crop of pure variety entered, and altogether about 210 farmers are competing in this competition. It is practically certain that there will be a big increase in the standing crops competition next year, because every farmer who is in the summer-fallow contest this year will have some land in first-class shape for growing a clean strong crop one year from now.

In addition to the judging on these two contests, judging also has to be done on 500 Manitoba farms where members of the Boys' and Girls' Clubs have each entered one-half-acre plots sown with pure registered seed supplied by the Manitoba Department of Agriculture. The greatest group of these boy competitors is at Minnedosa, where there are 32 young chaps in the contest. Most of the growers are working with Marquis wheat. This competition will likely assume much larger proportions next year, as the boys are expected to keep the seed grown and enter larger blocks sown with it in 1918.

Manitoba Creameries Prosperous

The make of creamery butter in Manitoba this year will show a substantial increase over that of 1916. On August 16th the fiftieth carload to be exported since January 1st was sent out of the Province. This compares with a total export of 21 carloads up to the same date last year.

Each of these carloads contained about four hundred 56-pound boxes, selling at an average price of at least $36\frac{1}{2}$ cents, which figures out to a total average value of over $8,000 per car. The consignments went mostly to British Columbia, Montreal and Fort William, with half a dozen cars going for consumption in Saskatchewan.

Because of the shortage of June rains, the supply of milk and cream has declined somewhat in the southern part of Manitoba, but the northern districts have more than made up for this. Especially important has been the expansion in active creamery work in the district between Lakes Winnipeg and Manitoba. In this territory three new creameries have opened up, two of them at Ericksdale and one at Ashern, and a large amount of first-class butter is being made at these places.

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Public Health Nursing

The system of Public Health Nursing instituted by the Provincial Board of Health has been extended considerably since reference was last made to it in the *Public Service Bulletin.* For some months past the department has had twelve nurses in the field, and this number would have been largely increased if nurses were available. The war must be held responsible for the great scarcity of trained nurses, as it has not only taken a great many devoted women for service overseas, but the return of so many wounded men to Canada has largely increased the number required in the convalescent homes and military hospitals. This condition, it is feared, may continue for some time, and the extension of public health nursing is therefore impeded by a situation over which the department has practically no control.

Progress of the work, limited as it has unfortunately been for the reason stated, has been most satisfactory, and has proved not only the great need but the great possibilities which lie before it in the future. Many municipalities and school districts have taken advantage of the system whereby the cost of maintaining a permanent nurse is shared in the proportion of one-third each by the municipality, the school districts and the Board of Health. At the present time, ten of the twelve nurses working under the department are under permanent contract with municipalities.

The methods pursued by the nurses has previously been told. While the work has hardly being going on long enough to make it altogether safe to draw deductions from the statistics recorded, it may safely be said generally that the physical condition of pupils in country schools in Manitoba averages very much the same as in other provinces and states where conditions have been ascertained. It may come as a surprise to many to be told that approximately fifty per cent. of the children examined are not normal and therefore require skilled attention of doctor or dentist for the correction of abnormalities, most of which, happily, are slight. Bad teeth and defective eyes are the most common trouble. In the case of bad teeth the trouble could practically always be overcome by dental work. In the case of defective eyes, a great many cases can be permanently corrected while most others can be greatly improved.

In order to give an idea of the work done by the Public Heatlh nurses, and conditions found, a summary is given herewith of reports for the month of June, 1917, the last full school month.

PUBLIC HEALTH NURSES' REPORT (June, 1917)

Number of school children inspected	1889
Number of school children re-inspected	330
Number of school children re-admitted	5
Number of school children referred to physicians	193
Number of school children referred for dental treatment	551
Number of school children not vaccinated	970
Number of school children with suspected defective vision	329
Number of school children with suspected defective hearing	110
Number of school children with suspected defective tonsils	657
Number of school children with suspected defective teeth	833
Number of school children with suspected adenoids	311
Number of school children with symptoms of eye conditions	73
Number of school children with symptoms of ear conditions	19
Number of school children with symptoms of enlarged glands	174
Number of school children with symptoms of pediculosis (living)	99
Number of school children with symptoms of pediculosis (nits)	76
Number of school children with symptoms of tuberculosis	14
Number of school children with symptoms of ringworm	18
Number of school children with symptoms of scabies	5
Number of school children with symptoms of other skin conditions	32
Number of school children excluded for various causes	47
Number of school children excluded with suspected communicable diseases	5
Number of school children excluded with contact cases communicable diseases	2
Number of school children excluded with symptoms of eye conditions	9
Number of school children excluded with symptoms of pediculosis	15
Number of school children excluded with skin diseases	14
Number of school children excluded owing to illness in school	2
Number of treatments given	88
Number of class room talks	164
Number of interviews	85
Number of home visits	675

It will be seen that the report shows that 675 "home visits" were made by the nurses during the month of June. This is one of the most important features of the work of the nurses. In many cases the visits are made merely for the purpose of observing conditions in the homes and offering advice and help to mothers where it is needed. In many others, the nurse goes to the homes of pupils who have been found to require some particular attention, and the advisability of giving the child this attention is impressed upon the parents. Where home attention or treatment is all that is required, the mother is offered instruction. The nurses report that generally speaking this feature of their work is much appreciated.

Another statement for the month of June given herewith shows statistics in one school (close to Winnipeg), and perhaps gives a clearer idea of just what conditions are found by the nurses in the average school.

REPORT BRITANNIA SCHOOL

Month of June, 1917

Number of school children insected	194
Number of school children re-inspected	43
Number of school children re-admitted	5
Number of school children referred to physicians	12
Number of school children referred for dental care	53
Number of school children not vaccinated	79
Number of school children with suspected defective vision	61
Number of school children with suspected defective hearing	19
Number of school children with suspected defective tonsils	36
Number of school children with suspected defective teeth	101
Number of school children with suspected adenoids	24
Number of school children with symptoms of eye conditions	3
Number of school children with symptoms of enlarged glands	20
Number of school children with symptoms of pediculosis (living)	11
Number of school children with symptoms of pediculosis (nits)	18
Number of school children with symptoms of tuberculosis	1
Number of school children with symptoms of ringworm	2
Number of children excluded from school	16
Number of children excluded from school with symptoms of pediculosis	10
Number of children excluded from school with symptoms of mumps	1
Number of children excluded from school with symptoms of illness	2
Number of children excluded from school with symptoms of German measles	1
Number of children excluded from school with symptoms of ringworm	2
Number of treatments given	27
Number of interviews	8
Number of class room talks	11
Number of home visits	53

The increasing interest in work for the improvement of the health of children attending schools in the Province is indicated in the movement toward the institution of free clinics. At Linwood school in the municipality of Assiniboia (this municipality has permanent public health nurses working in its schools) an Infant Welfare station was opened on August 2 and five clinics were held during the month, to which 42 mothers brought their infants for examination and received instructions from the nurses in attendance.

The Harvest Help Problem

Few farmers in Manitoba need to be told that there has been a decided shortage of harvest help in all parts of the Province this year. In fact, there are few who have not had actual personal experience of the shortage. Very fortunately weather throughout the cutting season has been exceptionally favorable; had it been otherwise the results would undoubtedly have been very serious if not disastrous. As it is, at the time of writing, the 1917 crop of Manitoba may be said to be safe, and the shortage of labor can be looked back upon as not much more than a decidedly unpleasant and troublesome feature of the harvesting, entailing heartbreaking work on many farmers who were forced to work unreasonable hours in order to get their crops cut at all. For the happy result, the farmers have first to thank the weather, but a great many owe a heavy debt of gratitude to the volunteer stookers from the cities and towns who worked in the fields in large gangs for a few hours each evening during the time of greatest need. No statistics are available of the amount of work accomplished by these volunteers,

but there is hardly a district in the whole of the Province in which their work was not an important part of the harvesting operations, and it is quite certain that tens of thousands of acres of cut grain were stooked by them which might otherwise be lying out in the fields to this day. The total of the work done by the volunteers was very large, and the thanks of the whole community are due to Mr. Adam Brown of Portage la Prairie, who first saw the possibilities of the scheme and who demonstrated its worth through the work of his own employees in the neighborhood of Portage la Prairie. His example attracted almost instant attention in neighboring districts, and within a week or ten days the movement had spread over the whole Province. Apart from the great money value of the work done, the movement was an example of what community spirit can do in the interests of all.

In view of the great importance of the question and in order to indicate what efforts were made at the time to meet the situation, the following statement issued early in September by the Department of Agriculture is reproduced. It shows not only what action was taken by the department, but conditions found which were largely the cause of the difficulty in securing the number of men required by Manitoba farmers. It may be mentioned here that at the time of this writing, reports indicate that the situation has been fairly well met, and that there will not be any very serious shortage of men for threshing. This is also indicated by the fact that there are but a few applications for men yet unfilled on the books of the department. The statement referred to follows:

From August 1st to August 28th the Provincial Immigration and Colonization Branch was able to send to the farms of Manitoba close to two thousand men who had been engaged directly in the department's office, 439 Main Street, Winnipeg; also approximately seven to eight hundred men who arrived on the excursion trains from the East.

The chief difficulty in securing the services of men arriving on Eastern excursion trains, for hiring to Manitoba farmers, is that Saskatchewan farmers are offering higher wages than the farmers of Manitoba, the difference ranging all the way from 25c to $1.00 per day, which in an open market makes it impossible to insure the supply for those who are not prepared to pay the prevailing wage.

The Superintendent of Immigration and Colonization, writing on August 28th, says: "Our records today show applications for 2,113 farm laborers. The excursions from the East did not bring more than one-third of the usual quota, but I feel confident that before the end of the season we will have the needs of Manitoba farmers as well supplied as is possible under existing conditions."

Two hundred farm labors agents throughout Manitoba were appointed by the Municipalities upon the request of this office early this summer, and the following quotation is part of a letter sent them on August 25th: "I am advised today by Mr. W. J. White, Inspector of U.S. Agencies for the Canadian Government, that arrangements were made with the government of the United States whereby by the end of August there may be expected a certain number of men from North and South Dakota to help garner Western Canada's crops. The understanding between the Canadian and American governments was that the men will receive in Western Canada the same wage as they are getting at present in the Dakotas, which is $4.00 and $4.50 per day including board. The purpose of this letter is to request you to ascertain as quickly as possible if the farmers in your district are prepared to pay the above-mentioned wage. In such case the Provincial Government of Manitoba would send their representatives to several points in North and South Dakota where the Dominion Government has opened special farm labor bureaus for the purpose of inducing as many men as possible to come to our Province, a share of whom will be despatched to your district. You will readily realize that it is impossible to get men for Manitoba unless we are going to offer the same wage as the Northwestern states and provinces west of Manitoba are paying. I shall expect a telegraphic reply from you, if necessary, so as to make proper arrangements in good time."

Numerous Manitoba farmers have suggested that the Manitoba Government should pass a regulation fixing maximum wages for harvesters. The Provincial Government apparently has no authority to do this, but even if it had the authority and were to put the price down in this way in Manitoba the labor situation would be worse than it is now. At present we are suffering mainly because wages at some places outside Manitoba are higher than they are here. Fixing maximum wages in one province while they were unfixed elsewhere would only drive away more of the men we need.

Fire Losses in 1917

A recent report from the office of the Provincial Fire Commissioner shows a rather bad fire record for the Province for the first six months of the year. The total loss reported in that period is $1,076,221, which is almost as large as the total for the whole of the year 1916, which was shown in the annual report to have amounted to $1,119,114. A feature of the report is that four of the fires causing very heavy loss occurred outside the city of Winnipeg, which usually is the scene of these large fires. The lesson from the report, some detail of which is given herewith, is the old lesson of the absolute necessity of individual precaution, not only in the interests of the individual who always suffers from fire on his own premises, but in the interests of his neighbors who have so little control over conditions outside their own places.

The following table shows the most serious losses sustained, some of which, the report states, could and should have been avoided:

	Cause	Loss
Scott-Bathgate, Winnipeg	Electric motor	$ 84,250
Great West Saddlery, Winnipeg	Careless smoker	25,000
Avenue Block, Winnipeg	Spontaneous combustion	45,000
Jobin-Marrin Co. Ltd., Winnipeg	Electric motor	82,786
Northern Elevator Co., Winnipeg	Hot bearings	61,641
Business Block, Killarney, Man.	Match carelessly dropped by storekeeper	21,000
Wallace Sandstone Quarries, Lyall, Man.	Electric wiring	186,384
Echo Milling Company, Gladstone, Man.	Presumed hot bearings	142,602
Booth Fisheries, Winnipegosis, Man.	Unknown	100,000

Financial Loss, Reported

City of Winnipeg	$ 375,497
Balance of Province	700,724
Total	$1,076,221

Total Number Fires Reported

City of Winnipeg	365
Balance of Province	250
Total	615
The City fires include—	
Automobiles	9
Street Cars	6
Grass and Refuse	97
	112

The specific cases mentioned were given rigid investigation as to cause, and the report states that while better care toward prevention should have been exercised, nothing of a criminal nature was established.

As to the general causes of fires, the report indicates that considerable trouble may be traced to the municipal ordinances of cities and towns. For instance, the health department orders the usual back-yard clean up, and owners scrape up and stack the rubbish in the yards, in many cases close to buildings. They then set fire to the stuff without proper precautions or regard to weather conditions, and the consequence is that in many cases the fire spreads and gets beyond control, with serious results. The department of the Fire Commissioner has been paying special attention to this condition, and report encouraging results.

Another enemy developed this year in the party spying out land. One guilty party located admitted that he had set fire to long grass, giving the excuse that he had desired to better the new grass. This fire spread and did considerable damage before it was controlled. Careless campers who fail to properly extinguish their fires before leaving a camping place come in the same category. A large number of new Fire Guardians, appointed under the new Fires Prevention Act, 1917, are reported to be keeping a sharp look-out for offenders under the new law.

The unusual absence of moisture during the month of May and a portion of June is held to a large extent responsible for the heavy losses reported.

Following is a list of new Fire Guardians appointed this year under the new law for the prevention and suppression of fires. A summary of this law, showing the duties of these guardians, was published in the April number of the *Public Service Bulletin.*

Charles Gill, Sprague
W. Wardrope, Whitemouth
E. Breneau, Lac du Bonnet
E. L. Fisher, Manigotogan
T. H. Thorsteinson, Gimli
A. Thordarson, Gimli
M. Spowkoski, Malonton
J. Nykorchuk, Komarno
Oliver Calverly, Fairford
Charles Denby, Winnipegosis
Marshall Balard, The Pas
George Ferguson, The Pas
Henry McKay, The Pas
John James Cochrane, The Pas
Patrick Ducharme, The Pas
Joseph D. Courcy, The Pas
Peter Lind, Sprague
W. C. Bartling, The Pas
H. A. McLeod, The Pas
T. McNaughton, Prince Albert, Sask.
H. Frank Stanley, The Pas
Capt. F. Scrase, Dauphin
E. M. Watt, Dauphin
J. H. Cairns, Grandview
J. I. Hjalmarson, Pine River
W. G. Shiel, Minitonas
J. A. McDonald, Durban
Jas. Cobbe, Kamsack
G. A. Porteous, Roblin
John Darbyshire, Garland
Wm. Fagan, Pine River
J. D. Morse, Durban
A. J. Wanless, Minitonas
James Fleming, Mountainside
Alfred Gill, Boissevain
W. A. Scott, Whitewater
Forest Ranger Williams, Roblin
Forest Ranger Kilminster, Grandview
Forest Ranger Pollen, Dauphin
Forest Ranger Ennis, Kelwood
Forest Ranger Franks, Kelwood
Forest Ranger Beddome, Danvers
Forest Ranger May, Sandy Lake
Forest Ranger W. Woods, Glenelmo
Forest Assistant Tunstell, Dauphin
Forest Supervisor Smith, Roblin
Chief Fire Ranger Vlackford, Norway House
Assistant Chief Fire Ranger Sinclair, Cross Lake

The department of the Fire Commissioner has issued a poster which contains many hints and items of advice of such pertinence that they are reproduced herewith:

The Provincial Fire Commissioner respectfully draws attention to the following:

The season of the year is approaching when heating appliances are requisitioned.

CHIMNEYS—Should be cleaned out.

STOVES, GRATES, ETC., that have been idle during the summer should be carefully looked into before starting another season.

FIRE PREVENTION DAY—Let every day be a Fire Prevention Day.

FIRE EXTINGUISHERS—Have these ready to fight a fire.

CARE OF PREMISES—Look over the premises daily and remedy defects that exist.

THINK OF ALL THAT A FIRE MEANS

KEEP YOUR PREMISES FOR PUBLIC INSPECTION in such a way as to defy criticism.

EVERY MAN AND WOMAN who neglects prevention helps the incendiary.

A DOLLAR SAVED IS WORTH ONE MADE

OILS, ETC., should be handled with care; the careless handling of these has cost lives.

RECEPTACLES FOR REFUSE should be cleaned out daily.

EXCELSIOR AND OTHER PACKING require attention.

WHERE WATCHMAN IS EMPLOYED—Don't overlook carelessness on the part of your watchman, watch him yourself.

SMOKERS AND SPORTSMEN are responsible for damage from fires caused by them.

FIRE ALARMS—For City of Winnipeg Call Main 100.

A PREVENTABLE FIRE is an evil that should be punished by law.

LET YOUR SLOGAN BE: "Prevention of Fire."

FIRES FOR THE SIX MONTHS, ENDING JUNE 30th, 1917, amount to over $1,000,000. Large percentage of this, should have been prevented.

Weed Eradication in Manitoba

"I believe we are at the turning of the way in the weed problem in Manitoba. While there is yet an abundance of weeds in many of the older infested localities, yet in the last ten or fifteen years that I have been driving through the country I have never seen as much clean crop." This was the comment offered the other day by a very prominent man who for several years has travelled extensively in Manitoba.

The Manitoba Weeds Commission regard this comment as indicating a keen appreciation of the situation. It is true, they admit, that this year produced many weeds. It is not true that the Manitoba inspectors instituted a wholesale cutting down of standing grain crops. The line of action pursued, the Commission believes, was based upon common sense. In the very nature of things, a great deal of judgment must be exercised in ordering crop cut down. There is, first of all, the value of the crop to reckon with, which this year is phenomenally high. Then there is the fact that cutting down crop does not in any sense clean the land of the weeds. Where such weeds as Canada Thistles or Perennial Sow Thistles are well established, they can never be eradicated by cutting, at least short of bankruptcy to every farmer whose land is now well seeded to those weeds.

The plan followed by the Commissioners, and urged upon local inspectors, has been to go any length to stamp out incipient patches of any bad weed in an area where it is making its first appearance; but in areas where the weeds are generally spread about to encourage the vigorous use of the plow and cultivator rather than the indiscriminate use of the mower. The result on most weedy farms has been to obtain the maximum area of clean land for next year's crop. On the other hand, the Commission found some men intending to let weeds go to seed on uncropped land, on roadsides, or waste places; also in some fields the crop was so crowded out by the weeds as not to be worth saving, in view of the advantage which this Summer's cultivation would afford, if the crop was plowed up and the land fallowed. In a few cases proceedings before a magistrate were necessary in order to enforce a cleaning of the land, but in most cases the good sense of the owner supported the line of action advised by the inspector or commissioner, and the land was put into Summer fallow. A potent factor in converting land owners to this line of action was the good crops grown everywhere this year on fallows which were well worked in 1916.

At present the Commissioners and Municipal weed inspectors are strongly advising farmers to treat as much weedy land as possible by skim plowing or disking as close after the binder as possible. Wild oats and many other annual weed seeds, if covered by the disk now, will germinate this Fall, and the resulting plant be killed by frost. The covered seeds will at least start to grow early in the Spring, and be killed by the next cultivation.

The men who expect a sudden clean-up of all the weeds in the Province will be disappointed; but those who are satisfied by seeing a yearly increasing number of clean fields where there were only weedy ones, will be satisfied, the Commissioners feel, that the corner has at last been turned. The increasing measure of public support from municipal officers is further ground for hoping that even greater progress may be made in the future.

The Hudson Bay Route

By John A. Cormie in The Geographical Review, July, 1917

Although the Dominion of Canada is at war and has undertaken to send overseas five hundred thousand soldiers, over four hundred thousand of whom are already in uniform, and although she has manufactured vast quantities of munitions of war and has raised several hundred millions of dollars for the prosecution of the conflict, she has at the same time continued to work on a project which has great historical interest and which promises to be an important factor in the future development of the country. No more romantic undertaking can be found in the history of North America than the long and fruitless search for the North-West Passage, a search which lured Henry Hudson from Europe for four summers in succession in the early years of the seventeenth century. After he had failed twice, his third attempt brought him to the mouth of the great river which bears his name, and the fourth carried him through the strait which posterity has called for him, out into the sea which Earl Grey called the Mediterranean of Canada and which may become the Baltic of North America. After sailing almost due south along the east shore of the bay, instead of the warm waters of the Pacific he found the marshes of James Bay, where a mutinous crew, having no vision of a new track for the world's commerce, turned him adrift in an open shallop and left him to his fate. The Gentlemen Adventurers of the Hudson's Bay Company, half a century later, followed Hudson's trail through the strait and set up their trading posts in a huge wilderness, which in these days is becoming an empire. Today the people of Canada are building the Hudson Bay Railway, a line over four hundred miles long, from The Pas, an ancient Hudson's Bay Company trading post on the Saskatchewan River, at the edge of the wheat fields of Saskatchewan and Alberta, to Port Nelson on the bay.

The first European colony in western Canada, sent out by Lord Selkirk slightly over one hundred years ago to found the Selkirk settlement on the banks of the Red River near where the City of Winnipeg now stands, sailed through Hudson Strait and Bay; and there is a well-defined opinion that the products of the western farms should follow the path of the first settlers and reach the European market by the short northern route. The steel of the new line is at the time of writing within ninety miles of the port. The greater part of the present summer will be occupied with the building of a large steel bridge over the Nelson River, at Kettle Rapids, and the rails will be laid for at least half of the remaining distance before fall. Were it not for the difficulty in securing both men and supplies, trains would be running to tidewater before the end of the current year and the dream of a generation of western farmers would be realized.

When we take into account the toll which the long rail haul to the seaboard at Montreal or New York has levied on the grain growers of the West, we need not be surprised at the steady demand for the new route, which is shorter by one thousand miles than that by Montreal. It has been realized that Port Nelson is practically the same distance from Liverpool as is Montreal, and that a car of wheat on its way to Europe from Regina could be at the port by the time it would have reached Fort William by the other system. Thus the saving is the thousand miles between Fort William and Montreal by rail or the very much longer distance and the double handling of the lake route. From central Saskatchewan and northern Alberta and the new settlements which will undoubtedly be formed still farther north, as for instance, the Peace River settlements which are already begun, the saving in mileage will be much greater. A glance at the map will show that the benefits which will accrue to the farmers of Western Canada with the development of this short road to Europe will be enjoyed by their neighbors in the Western States. The grain country tributary to the Great Northern Railway is several hundred miles nearer Europe by way of Port Nelson than by way of New York.

If one of the results of the war should be the realization of the expectations held by many public men of the Dominion, there will be a very large and rapid increase in the population of the prairie provinces. Principal Oliver, a widely known educator of Saskatchewan, said in a recently published address, "Europe with her war debts, with crippled and disorganized industries, will not be the Europe that but yesterday flaunted the glories of its riches in the face of the whole world. If we had a flood of immigration when Clifford

Sifton opened the sluice gates, now will come an avalanche." Lord Shaughnessy, of the Canadian Pacific Railway, has recently given his opinion that, though "bleeding with sacrifice and bending with every effort on behalf of the great Empire of which she is an integral part, Canada's biggest role in the play of nations is not now but in the future. Its population is not a fraction of what it should be, of what it is capable of becoming, and of what it will be after the war." Ex-President Taft's remark that "the country is still hardly scratched" is particularly true of the area lying immediately tributary to the Hudson Bay Railway. With the coming of more people, there will be, of course, greatly increased production.

Necessity for Hudson Bay Route

The congestion in the grain elevators and on the railroads ever since the fall of 1915, when Western Canada produced the record crop of over three hundred million bushels of wheat, is another condition that must be taken into account in connection with the Hudson Bay route project. With increased population and enlarged crop acreage, the record of 1915 will before many years be far below the average annual yield. The farmers of the West, to use their own phrase, are "getting into cattle." Mixed farming with rotation of crops is now a necessity in the older districts. The northern sections of the provinces, with their greater yields of natural hay and the protection afforded by larger forest areas, together with the fact that a short haul of two or three days will bring cattle to tidewater, will more quickly develop mixed farming.

The cost of transporting farm products is now so great that it is declared by agricultural authorities to be the chief cause of the relatively low returns to the industry. This disadvantage increases as settlement proceeds farther north and west. It burns the farmer's candle at both ends, giving him lower prices for his products and increasing the cost of all the commodities he purchases.

These three considerations, the reduction of one thousand miles of rail haul in the distance that now separates the granaries of the West from the Liverpool warerooms, with consequent lowering of the cost of transportation both ways, the prospect of large and rapid expansion in volume of production, and the demands made upon the railway facilities by the present agricultural output, make out the case for the Hudson Bay route, provided there be no insuperable obstacles to its construction and operation.

That there have been, and are, obstacles in the way of the project is beyond question, but it appears to be equally beyond doubt that they are not insuperable. Perhaps the chief hindrance to the advancement of the work in the past has been the attitude of the great trading companies, notably of the Hudson's Bay Company, to which was given in 1670, by King Charles of England, a monopoly in trade for all future time over all the north-western part of North America, and whose interest it was to preserve their trading and trapping grounds from the incoming of the white settler. A thick cloud of darkness was accordingly spread over all their territory. This was broken first in Oregon, and the operations of the Adventurers of England have been gradually forced back by incoming settlement, until now the only territory left lies north of the Saskatchewan River. Reputed inhospitable climate and alleged barren soil have been urged as an objection to permanent settlement in districts where today there are thriving communities. Investigation has disclosed the fact that the climate of Manitoba, four hundred miles north of the international boundary, on account of the absence of windswept plains, and because of the proximity to the waters of Hudson Bay, the temperature of which is slightly higher than that of Lake Superior, is more endurable than that of Winnipeg. Cultivated strawberries have been matured in The Pas, the southern terminus of the road, and all ordinary vegetables are grown with success at points along the line as far as Port Nelson. Happily the plains of Western Canada are now known to be fit habitation for others than Indians and buffaloes, and, in time, the darkness will lift from the great areas north of the prairies

A second difficulty encountered in building the road was the absence of authoritative maps of the district through which the road was to be built. Apart from a knowledge of the general courses of the Churchill, Nelson, and other larger rivers, there was no reliable information, and knowledge of the details of these river courses was vague. Along the line there are many lakes, but nothing was known of most of them until the surveyors

went in to locate the railway, and knowledge of the general topography of the country was in an equally vague state. While the preliminary survey of the railway was difficult and costly, valuable additions have been made to our geographical knowledge of the Dominion.

Some of the Difficulties

The lack of settlements along the proposed line was a further difficulty. Apart from groups of Indians, widely separated, with an occasional trading post and mission, there was no settlement and no mode of access but the canoe in Summer and the dog train in Winter. The railway builders had to pierce this unsettled land, carrying along with their building material, all supplies of food and fodder for an army of workmen and their animals. The road could not be built in sections, as was done with the recently built National Transcontinental Railway of Canada. It had to be pushed out mile upon mile from the south.

Perhaps the greatest of all the difficulties that lay in the path of the enterprise was the antagonism of influential Eastern interests, who have the ear of both political parties, and have used their influence to prevent the beginning of the work, and are today attempting to delay construction, some, indeed, advocating the entire abandonment of the project. A Toronto weekly, with a considerable circulation, remarked, when the call came for railway iron for the battlefields, that the Hudson Bay Railway might now justify its existence by tearing up its steel and shipping it to France. Some months ago the *Toronto Globe* said: "The opinion among competent judges is that the Hudson Bay Railway is the biggest sinkhole into which the money of the people of Canada has ever been put." This reminds one that the late Alexander Mackenzie objected to the building of the Canadian Pacific Railway on the ground that it would not pay for its axle grease. Happily for the Hudson Bay Railway, as well as for some other matters, the people of the West have reached a point of political influence where they can no longer be ignored, and opposition in other parts of the country cannot prevent the route from being put into operation. The Manitoba *Free Press* replied to the *Globe* by saying: "Malevolent Eastern interests may delay but they cannot defeat this great national project, designed to free, to some extent, the Western wealth producer from his Eastern financial master."

The building of a harbor at the mouth of the Nelson River has not been easy. The drainage basin of the Nelson includes all of the Canadian prairies, the Red River valley in the United States, and Ontario up to a point seventy miles west of Fort William. This means that the Nelson is a very large river. It carries down great quantities of silt, which are deposited at the mouth of the channel, creating extensive sand bars and an unstable river bottom which will require constant dredging.

An island is being built in the deep water at the mouth of the Nelson which will be reached by a steel bridge, and, while engineering mistakes appear to have been made, the experimental stage is past, the most difficult work is done, and the building of a substantial dock is now only a matter of time.

The Question of Navigation

Is Hudson Strait navigable? A railway can be built from the wheatfields to the bay, the mouth of the Nelson can be converted into a commodious harbor which the largest ocean boats can enter, but can the strait be navigated for a period each year sufficiently long to justify the attempt to operate the northern route? On the answer to that question hinges the whole problem. Hudson Strait is a body of water about four hundred and fifty miles long, in width varying from fifty miles to two hundred miles, through which the ice-drifts from Fox Channel pass out into the Atlantic. Through this strait all traffic to and from Port Nelson must pass, and, although the port is six hundred miles from the western end of the channel, its importance as a sea port is absolutely determined by the length of time each year navigation can be safely carried on through the strait.

That the strait is navigable no one disputes. Who penetrated it first is not known, but it is known that Henry Hudson, with a poor little tub of a boat and a mutinous crew, sailed into the bay on August 4, 1610, and that the crew, after casting their master adrift the next Summer, went out through the strait and reached home that same year. The following year Admiral Button was sent out by the British Government to search for the lost adventurer. He reached the Nelson River, wintered there, named the port after his

first mate, who died during the Winter, and returned to England in 1613, to report finding no trace of Hudson. In 1615 William Baffin, whose name lives in Baffin Island, penetrated the strait and was in the open water of the bay on July 3. The Hudson's Bay Company boats have used this northern route to reach their fur posts for two centuries. If these early navigators, in an unknown sea, with all the handicaps of little sailing vessels, could safely sail these northern waters, what may not be done with charts, lights, the extension of the wireless system from Port Nelson, a flotilla of ice-breakers, and modern steam-driven and steel-clad boats? In 1915 thirty-six passages are known to have been made without mishap.

In regard to the length of time during each Summer that navigation is possible, the opponents and friends of the project must content themselves with opinions. There is general agreement that for four months of the year, including August, September and October, with parts of July and November, the strait can be safely sailed. The late Admiral Markham, who, with Commander Gordon, in 1886, made an investigation, the report of which has never been superseded, said: "It is almost impossible, until more is known of the movements of the ice in the strait, to allot any fixed period. From the general information I have acquired from various sources more or less trustworthy, combined with my own experience, I am prone to believe that Hudson's Strait would be found navigable for at least four months every year, and probably often for five or six months. There will, I have no doubt, be many years when navigation can be carried on safely and surely from the first of June to the end of November." In 1907 an investigation was made by a select committee of the Senate of Canada, on "the navigability of Hudson Bay and Hudson Strait, as an alternative means of communication with the north-western regions of Canada," since published in a report entitled "Canada's Fertile Northland," and evidence was taken from men competent to express opinions on the subject. Mr. A. P. Low, the then Director of the Geological Survey of Canada, said: "The strait is navigable from about the middle of July until the first day of November anyway, and a couple of weeks might be added at the end, because the ice in Hudson Bay, the new ice, is of no consequence to a ship until it gets to be 15 or 18 inches thick, and not much ice forms before that date." Altogether, Mr. Low considered the Hudson Bay route, when it was clear, an even clearer one than the St. Lawrence. There are at least two months when there is no trouble from ice at all. Dr. Robert Bell, of the Geological Survey, also appeared before the select committee and said that all his trips through the strait were between June 22 and about October 10, and he expressed the opinion that the strait is navigable between these two dates. Dr. Bell said he "did not know any more desirable piece of navigation in the world, excepting the middle of the ocean, and even then a common sailor, who could not take an astronomical observation, could sail through the straits with perfect safety. That was what Henry Hudson's men did after putting him and part of the crew into an open boat and leaving them behind." He was further of the opinion that ocean-going vessels would be suitable for navigation in Hudson Bay and Strait, but in the Winter it might be all the better if the ships were protected. Similar testimony in very imposing volume, some more favorable, some less so, is available. The success of Canadian ice-breakers at Archangel has helped to increase confidence in this northern route.

In estimating the value of this new line of communication, it must be borne in mind that, even at the present rate of production, the crop is never out of the country the year it is harvested. Mr. Gutelius, the superintendent of the Canadian Government Railways, estimated that it would take the railways two hundred days to move the crop of 1915. This estimate was unduly optimistic, for part of the 1915 crop was still in the country when the 1916 crop began to come upon the market. With so short a crop as that of 1916, it was estimated that on April 5, 1917, there were still approximately 25,000,000 bushels of wheat in the Province of Alberta, 35,000,000 bushels in Saskatchewan, and 12,000,000 bushels in Manitoba. This grain will still be moving East at the time the Hudson Bay Railway opens. Abnormal shipping conditions created by the war must be taken into account, but, as population increases, a smaller proportion of every crop will be shipped out the year of its production. Taking the three Western Provinces, a comparison of the yearly production of wheat and oats in bushels is shown by means of the accompanying table, published in the *Bankers Magazine* (New York):

	Wheat	Oats		Wheat	Oats
1907	70,922,584	74,513,000	1912	196,000,000	224,500,000
1908	96,863,689	108,987,000	1913	188,878,000	208,308,000
1909	119,200,000	163,998,000	1914	134,445,000	150,474,000
1910	101,236,000	108,301,000	1915	370,000,000	305,680,000
1911	169,725,000	185,570,000	1916	160,000,000	232,409,000

Consideration must also be given to the fact that the country buys as well as sells, and that the payment of the heavy cost of rail haul to the stations on the prairies is made by the purchaser. If farm products can be shipped out via Port Nelson and the strait, commodities can be brought in over the same route—must, indeed, be brought in if the project is to be a commercial success. Coal, for instance, as any one living in the north-west knows, is an important part of the necessaries of life. Mr. M. J. Butler, formerly chief engineer of the Department of Railways and Canals of the Dominion Government, said, in his report on this route: "I believe it is practical to lay down coal at Port Nelson from Nova Scotia at a cost not exceeding $3.75 per ton. The rail haul to Saskatoon, as an average point of distribution, need not exceed $4.00 per ton, making the cost $7.75 per ton."

Resources of the Country

What of the country through which the road is being built? Is there a future for New Manitoba which would justify the construction of this line, apart from overseas shipping?

The oldest industry, is of course, that of the trapper. An army of trappers bring into The Pas, the commercial centre of the district, an annual catch of fine fur to the value of $250,000. The manager of the Hudson's Bay Company post at this point in the days before the railway brought competition, has bought as many as 250,000 musk-rat pelts. All the fine furs, beaver, otter, mink, silver, black, red, and white foxes, are taken in large quantities, and at least two men have begun the industry of breeding silver foxes. The fishing industry, carried on during the winter, has reached considerable dimensions, the catch, consisting of whitefish, lake trout, and pickerel, for the season amounting now to about one thousand tons. Permission was given in 1916 to take sturgeon from the lakes. Owing probably to the clear, cold water of the northern lakes, these fish are not excelled. Considerable areas are covered with spruce, and a beginning of the lumber industry has been made by the Finger Lumber Company, which has established a plant at an outlay of one million dollars, with a daily cut of 200,000 feet of lumber. The amount of pulpwood has not been estimated, but there are apparently vast quantities of such wood. During the past year much attention has been paid to the discovery of mineral-bearing rocks in the western flange of the "Great Canadian Shield" over which the railway runs. In northern Manitoba these rocks cover an area approximately 140 miles in length and 25 miles in width. Near Mile 86 on the railway gold has been discovered, and mining operations have been begun on three claims. The ore is gold-bearing quartz, and the first car recently shipped out, which was in the nature of a test, was treated in Trail, British Columbia, and the returns are said to be satisfactory. Farther east than the goldfields, at a point almost on the boundary between Manitoba and Saskatchewan, copper ore has been discovered in two bodies, one of which is very large. Operations have been begun on the smaller of these bodies, and during the past winter 3,600 tons of ore have been taken out. This ore contains 22 per cent of copper, and there are also iron and some zinc. On the larger of these bodies of copper ore the work of drilling, with a view to determining its size, has been carried on for several months. It is not possible to say more about the mineral outlook of the country, for the reason that there has been little prospecting, but the rocks are of the same geological age as those at Cobalt and Sudbury in Ontario, and mining engineers have said that the future of the mining industry of New Manitoba is very bright indeed. Power from many rapids and waterfalls may play a large part in the development of this industry.

Is there an agricultural future for the district? For the first ninety miles of the railway line, the country is low and swampy and covered with moss. Under the moss is heavy clay, carrying many glacial boulders. Nothing can be done with this land until it is drained, and it is doubtful if much of it can be drained. For fifty or sixty miles farther the country is rocky, and what soil there is is too shallow to be of any use. Beyond this, the railway

enters the so-called "clay-belt," indicated on the map of the Geological Survey as containing about 10,000 square miles. Many opinions have been given as to the value of this land for agricultural purposes. Mr. J. B. Tyrrell, a witness before the Select Committee referred to above, expressed the opinion, that there is "a magnificent stretch of country there and it extends westward along the Churchill. These lands north of Lake Winnipeg are clay lands, an extension of the same basin as the Manitoba clays." Mr. Tyrrell said he believed that that country, while a little harder to be settled, and not so productive to settlers who are looking for farms ready made and cleared for them and ready for planting to wheat, will be as fine an agricultural tract of land as there is in the northwest. Mr. William McInnes, geologist of the Geological Survey, said that "after leaving Split Lake, ascending the river, this clay-covered country shows absolutely no boulders and no gravel. . . There is absolutely nothing to interfere with the cultivation of the soil there. It is a country that has been burnt over. . . It has been subject to repeated burns. At the present time, it is covered by a very open forest. Grasses grow fairly luxuriant." Mr. McInnes said he did not mean to say that all of that 10,000 square miles was good land, but the basin characterized by this deposit of clay has an area of about the size mentioned. During the summer of 1910 an inspection of timber was made by J. R. Dickson, Assistant Inspector of Dominion Forest Reserves, along the proposed line of the Hudson Bay Railway. He traversed part of the clay belt and reported that it "contains upon the whole from 50 per cent to 75 per cent of arable land and probably has a good agricultural future. The soil is exactly similar to that around Cochrane in New Ontario, which yields such large returns under right treatment." In order to make a practical test of the climatic and soil conditions of this land, the Department of Agriculture of Manitoba, in the Spring of the current year, opened up a small experimental plot, no returns of which have come to hand. While it is true that there are gardens wherever there are permanent residents, at Hudson Bay's Company posts and missions there is no farming, and it remains to be seen whether or not the greater proximity to tidewater will give these lands a value that will make them rivals to the more open lands on the prairies, of which there are still vast quantitites unoccupied. Dr. John McDougall, quoted by Major Chambers in "The Unexploited West," says the district, "though wooded to a considerable degree, is a far more enticing agricultural proposition than that which faced the early settlers on the bush farms of Ontario and the eastern provinces fifty years ago." The day will undoubtedly come when a large agricultural community will be found in New Manitoba.

A Shorter World Route

Apart from the possibilities of agricultural development in New Manitoba, created by the successful operation of the Hudson Bay Railway, there is a large territory in Saskatchewan lying north of the great river which has given its name to the province and a still larger area along the upper stretches of the Peace and Mackenzie Rivers, where development is retarded by the lack of easy communication with the world's markets. Mr. Tyrrell, speaking of means of communication with the Peace River country, said,: "If the Hudson Bay route was opened, it would be very much better than that—shipping to the European markets via Pacific ports. It would be very much shorter and a great deal of time would be saved. The people of Athabasca would be as much on the front as they are at Fort William."

Taking a very much larger view of the problems of communication and examining the broad question of the transportation of the world's supplies, it may be held that Hudson *did* make the great discovery. He was searching for a short route from England to the rich markets of China, and he died somewhere along the shores of the bay in disappointment at the apparent failure of his quest. He may not have failed. From England to eastern Asia via Suez is a distance of about 16,000 miles. By way of New York and San Francisco it is about 11,000 and by way of Seattle or Vancouver about 10,000, but by way of Port Nelson and Prince Rupert it is less than 8,000, and, to use the language of the North, "the portage" from Port Nelson to Prince Rupert is much shorter than that on either of the other systems. Posterity may credit Henry Hudson with success.

Comparison of the cost of building the railway with that of other enterprises to which the Canadians have set their hand should be made. The St. Lawrence channel has cost the Dominion Government about $38,000,000. A harbor is being built at Toronto at an expendi-

ture of $20,000,000, and the reconstruction under way of the Welland ship canal will cost $50,000,000. The estimated cost of the Hudson Bay Railway, including the terminals at The Pas and Port Nelson, is $26,000,000. If for four months each year the transportation of the western crop can be expedited by having the distance to Europe reduced by one thousand miles, it is probable that the grain growers will insist that no obstacles be placed in the way of an early completion of the line. "Nothing but an actual test will ever prove which opinion about the northern route is right. The believers in the route await that test with absolute confidence."

Free Antitoxin and Vaccine

For a considerable time the Provincial Board of Health has been making free distribution of Diphtheria Antitoxin, the price for which has recently increased so much that the necessity for this free distribution has become much greater than ever before, as many people find that they can ill afford the great cost of the Antitoxin.

Distribution is made through local Health Officers, to whom any regular practising physician can make application for a supply for use in cases to which he has been called.

The Antitoxin is measured in units, the usual dose varying from one thousand to five thousand units. The extent of the demand may be judged from the fact that over five million units have been distributed free by the Board of Health this year.

This cannot be taken to indicate that there has been an unusual amount of diphtheria in the Province during the past year, but rather indicates that there has been more careful diagnosis than previously. This is also indicated by the fact that the Bacteriological Department of the Board of Health is being much more freely used by doctors throughout the Province.

The Board of Health also distributes vaccine free, and the records of the department show that close to ten thousand vaccine points, each of which represents a separate vaccination, have been supplied free during the year.

Automobile License Department

Records of the Automobile License Department in the office of the Municipal Commissioner show a considerable increase in the number of cars in the Province this year and a corresponding increase in collections for licenses, etc. The total collected during the license year to August 31st is $185,385, and the books show a total of 16,237 automobiles owned and licensed. Collections were made up as follows:

Automobiles, privately owned at $10 each	$16,186
Automobiles municipal owned, at $1 each	71
Transfers of auto licenses at $2 each	594
Extra plates, replacing lost, at $1 each	206
Dealers' licenses, at $25 each	338
Dealers' plates, at $1 each	838
Motorcycles, privately owned, at $2 each	159
Motorcycles, municipal owned, at $1 each	22
Transfers of motorcycle licenses, at $2 each	10
Extra motorcycle plates, at $1 each	12
Chauffeurs' licenses, at $5 each	1,557
Extra chauffeurs' badges	18
Driving permits, members of owners' family	579
Lists of automobile owners, at $1 each	178
Examinations of drivers, at 50 cents each	850

Reminder from the Game Department

The Provincial Game Department is reminding residents of Manitoba that the season for elk, deer, prairie chicken, partridge, other grouse, etc., has been closed indefinitely and that none of these must be shot, killed or taken at any period of the year. Reports to the department indicate that there are still some people who do not understand the law. Copies of the Manitoba Game Act can be had free on personal or written application to the Chief Game Guardian, Parliament Buildings, Winnipeg.

Opportunities in Sheep Raising in Manitoba

By W. W. Fraser, Live Stock Commissioner For Manitoba

It should be necessary only to draw the attention of the public to the opportunities in the sheep industry in order to arouse interest in the minds of thousands, and to obtain their participation in this, one of the most important of industries. Especially is this true when we consider that an enlargement of the sheep industry means an increase of supplies both for food and clothing.

The grave responsibility, resting on us as a people, to produce both, is one that we must face. The sortage of clothing material is as acute as the shortage of food, and the price of wool is five times as high as it was five years ago, and it is still going up, with our increased armies demanding great supplies of clothing. World statistics show an alarming falling off in the number of sheep; this should cause every citizen to render some assistance toward increasing the industry. It has been suggested by some acknowledged authorities that the price of wool will yet reach the dollar mark.

There are in Manitoba thousands of acres of unused lands where sheep would thrive, and convert the pastures into food and clothing, and the present great need calls for some definite action along this line. Not only should the farmers of Western Canada take an increased interest in this paying industry, but many citizens in other walks of life could participate. While many of our farmers are in a position to purchase foundation stock, there are thousands of others who cannot make this investment. If people in our cities, for example, having money to invest, would loan such farmers sufficient money to enable them to purchase these sheep, charging a reasonable rate of interest, say 7 per cent., or if they would purchase the sheep and let the farmers have them on shares, it should be found that either plan could be made perfectly satisfactory to both parties. This would greatly stimulate this industry.

The interest of the person advancing the capital should be perfectly safeguarded, in the case of the loan, by a lien note, and in the case of letting the sheep out on shares the animals should remain his property during the interval of the arrangement, say three to five years. The enterprise should be profitable to both parties, and it would greatly stimulate production.

Many persons in our cities and towns have one hundred dollars or more to place in a bank, which, if invested in this way, would give them a much larger return, and lend to them an opportunity to assist in this excellent work. It would do more; it would awaken in these persons an interest in the movements of production, besides producing a further spirit of co-operation between the producer and consumer. Our financial institutions would in no way be debarred from rendering even greater assistance along the same lines; and this, of course, would have a still greater effect on the situation.

The combining of flocks during the Summer months, after shearing is over, and the sheep have been dipped, several farmers going together and placing their sheep in charge of a shepherd, would largely eliminate trouble from wolves and dogs, which at times ravage all our small flocks. The constant care of a shepherd decreases the loss in many ways. Feeding off weeds could be more effectively done on farms if the sheep were under the control of a shepherd. The flock could be moved from farm to farm, as occasion presented. Thus there could be obtainable a change of pasture, which is so desirable for sheep, and the fertilizer they furnish would thus be of much more value than if the sheep were run in the ordinary way in some confined pasture, as is now the general custom; often in woods or rough pasture, where the droppings, more or less, are lost.

This system of running flocks together is almost as old as the hills themselves. In the British Isles, the practice is for farmers to put their flocks together and run them on the hills in charge of a shepherd. The same plan could be adopted here.

Difficulty of Shearing Reduced to a Minimum

Up to the present a great deal of difficulty has been experienced by farmers keeping sheep, in not having them properly shorn by the old method of the hand shears. Very frequently farmers could not get an expert shearer, and the work was not properly done, besides handling the sheep more or less roughly. Professional shearers can now be secured to shear any number of sheep at 15c per head, using modern clippers operated by a small

gas engine. The shearing can be done much more quickly and more evenly than by the old method, also a greater quantity of wool per sheep can be obtained.

Let me cite an example of the possible returns, at the present time, from breeding sheep. At the Regina and Saskatoon fairs, the Saskatchewan University had on exhibition several pens of sheep as well as cattle, in which the sire and dam and their offspring were shown. This proved to be a very instructive exhibit. I shall refer only to one of the pens, which has a sign placed over it as follows: "Western Ewe No. 10. Fleece 7 lbs., and her four lambs." These consisted of two wethers, 1916 lambs, and the present year's lambs, which were four months' old, weighing 75 lbs., sired by a Southdown ram. The yearling wethers were sired by a Shropshire ram, and each weighed 160 lbs.; each fleece 10 lbs. By calculating the production of this ewe for two years at present market prices here, it will be seen that the returns would be more than $70. I grant that this is an exceptional return, as this ewe had two lambs each year, and the average annual increase of a sheep might be placed at 100 per cent; or one lamb for each ewe. The average ewe would, on this basis, yield $35 in two years, or $17.50 per year. This illustrates what may be expected from a flock of sheep kept under average circumstances.

The Manitoba Department of Agriculture will assist the sheep and wool industry in any way within its power, and the hearty co-operation of all others is requested.

Vegetable Storage

The cities and towns of Canada have been full of "war gardens" this year. In the City of Winnipeg alone the Municipal Street Commissioner's office plowed 1,350 vacant lots, which, at an average size of 36 by 100 feet, amounts to considerably more than one hundred acres. Practically every one of these lots had never before been broken from the sod. In addition, every back yard garden that had ever previously been used was made to produce to its limit. In the smaller towns the same thing has happened.

Without doubt the consumption of vegetables during the coming Winter and Spring will be very great. The Dominion Food Controller asserts that it is the patriotic duty of all good Canadians to refrain as far as possible, from using beef, bacon and wheat flour. Under the circumstances, seeing that the people at home must eat something, the consumption of vegetables will be great, and every vegetable grown should be cared for. But with their cellars filled pretty well with potatoes of their own growing, city householders may not be very keen buyers during the early Fall, and there will be more reason than in past seasons for part of the farm grown crop being stored at home.

To meet the need for advice as to vegetable store houses, the Manitoba Department of Agriculture is publishing a bulletin entitled "Vegetable Storage." The authors are Professors Smith and Broderick of Manitoba Agricultural College. Professor Smith presents drawings and building instructions for those wishing to construct excavated storage houses, while Professor Broderick discusses the essentials of successful storage. A valuable feature is a storage table which discusses in detail the storage requirements of the leading types of vegetables.

Copies of this bulletin may be had free by writing a card to the Publications Branch, Manitoba Department of Agriculture, Winnipeg.

Inspection of Meat

The recent decision of the Provincial Board of Health to inaugurate a system of inspection of all meat slaughtered in the Province, is soon to be carried into effect.

An inspector will commence work on October 1st, and will make a careful survey of every slaughter house and abattoir in the Province, preliminary to the granting of licenses, which will date from January 1st, 1918, and will be issued only after inspection. This will give ample time for changes or repairs that may be found necessary by the inspector before license can issue.

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Manitoba Wins at Peoria

An event that must be recognized as one of the most important in the history of agriculture in Manitoba was the remarkable success of Manitoba farmers who exhibited grain and other products at the 12th International Dry-Farm Products Exposition, held this year at Peoria, Illinois. For many years this has been the leading annual competition event in America, especially in wheat growing. All of Manitoba has heard of the remarkable record made by Mr. S. Larcombe, of Birtle, who not only won the big event, the sweepstakes in wheat open to the world, but also won first for hard red Spring wheat. Quite as remarkable as these two notable wins for Manitoba wheat was the fact that Mr. Larcombe secured third for the best collection of farm products grown by any one farmer in spite of a very heavy handicap through the fact that the list of points included products that are not grown in Manitoba. Making allowance for this handicap, Mr. Larcombe's actual exhibit was easily the best in the competition, and was an unequalled proof of the wonderful fertility of Manitoba soil and the adaptability of the Province to every kind of agriculture.

Another remarkable fact that has perhaps been overlooked in the jubilation over Mr. Larcombe's success in the wheat classes lies in the winning by Manitoba entries of the first three places for hard red Spring wheat. To realize what this means, it must be remembered that in the same competition was prize wheat from the other Western Provinces as well as from all the hard wheat states.

Manitoba's winnings, as has been stated, were by no means confined to grain but were spread over the following products: wheat, oats, rye, millet, flax, potatoes, beets, onions, mangels, cauliflower, sugar beets, garlic and crab apples.

The Manitoba exhibits were in charge of Prof. T. J. Harrison, of Manitoba Agricultural College, who gathered the exhibits at the request of the Department of Agriculture. He was under somewhat of a handicap in having to get the exhibits together in a hurry owing to the exposition being held earlier than usual this year (the last week in September) and Manitoba's northern grown products mature later in the season than those produced further south with which they had to compete.

Following is the list of winnings by Manitoba farmers which has given the Province so much splendid advertising throughout the continent:

Prizes Won by Manitoba

Best collection grown by an individual farmer—Third, to S. Larcombe, Birtle.
Hard red Spring wheat—First, S. Larcombe; second, A. Cooper, Treesbank; third, W. J. Carruthers, Methven.
Sweepstakes in wheat—First, S. Larcombe.
White Oats—First, M. P. Mountain, Solsgirth.
Rye—First, John Strachan, Pope; third, D. C. Ferguson, Winnipeg.
Sweepstakes in rye—First, John Strachan.
Hungarian millet, sheaf—Second, R. T. Trischman, Whitemouth.
Flax seed—First, H. J. Pritchard, Roland; second, David Pritchard, Roland.
Sheaf of oats—Third, S. Larcombe.
Potatoes, Russet Burbank—Second, S. Larcombe.
Potatoes, Gold Coin—Third, A. Cameron, Carman.
Potatoes, variety unstated in message—Third, A. Cameron.
Six table beets—First, S. Larcombe.
Yellow onions—Second, H. C. Whellams, East Kildonan.
Mangels—First, H. C. Whellams.
Ripe tomatoes—Third, H. C. Whellams.
Cauliflower—First, H. C. Whellams.
Sugar beets—First, H. C. Whellams.
Garlic—First, H. C. Whellams.
Crab apples—Third, A. P. Stevenson, Morden.
Dry farm hard red Spring wheat—Second, S. Larcombe.
Dry farm barley—First, Charles Depape, Swan Lake.

Good Roads Competition

The report of the judges in the 1917 split-log drag competition held under the auspices of the Manitoba Good Roads Association has just been issued and is appended herewith.

During a portion of the time covered by the competition, and to encourage interest in the best methods of road work, a demonstrator appointed by the Department of Public Works gave assistance and advice by way of actual demonstrations of the best methods of handling the split-log drag. In this connection the following resolution was passed at the meeting of the Manitoba Good Roads Association on October 17th, following the reading of the report of the judges:

"That owing to the valuable work done by the demonstrator in connection with this year's road dragging, the government, through the Minister of Public Works, be requested to make the appointment covering the whole dragging season in future."

The report of the judges is as follows:

Winnipeg, Man., October 17th, 1917

The Chairman and Members,
Manitoba Good Roads Association, Winnipeg.

Gentlemen— (Re 1917 Split-Log Drag Competition)

We beg to report on the above competition and to recommend that prizes be awarded as follows:

Gravel Class

1st and 2nd Prizes—$40 each and the "Banfield Cup"—The northerly and southerly two miles of the East Main Road, Mun. of East St. Paul.

3rd Prize—$20—North pt. 15 and 16-13-2E. and E. of 15-13-2E., Mun. of Rockwood.

3rd Prize, Special, The T. Eaton Watch—North two miles of the West Main Road, Mun. of West St. Paul.

4th Prize—$10—The south two miles of the Two-mile Road, Mun. of East St. Paul.

4th Prize—Special, $10 donated by Mr. E. W. Hamilton, Editor *Motor in Canada*—North of Sections 13, 14, 15, 16 and 17-11-4E., Mun. of Springfield.

5th Prize—Special, Goods to value of $5, donated by the Royal Crown Soaps—Through 25, 26 and 27-13-1E., Mun. of Rockwood.

Earth Class

1st Prize—$50 and the Henry Birks Sons' Shield—St. Mary's Road, from the southern limit of Lot 232, St. Norbert, to the southern limit of Lot 248, St. Norbert, Mun. of Richot.

2nd Prize—$30—From the west corner of S.E.$\frac{1}{4}$ 7-12-1E. to west corner S.E.$\frac{1}{4}$ 9-12-1E., Mun. of Rosser.

3rd prize—$20—From east line of Lot 69, St. Charles, to 84 St. Charles, and from Lot 1, Headingly, to west line, Lot 4, Headingly (known as Roblin Boulevard), Mun. of Charleswood.

4th prize—$10—From S.E. corner of 13-12-1W. to S.E. corner of 25-12-1W., on meridian, Mun. of Rosser.

5th prize—special, gold cuff links, donated by Henry Birks & Sons.—All of St. Vital Road, from St. Mary's Road to the southerly limit of D.G.S. 45, St. Vital, and all of Victoria Crescent, including Delmar Road, Mun. of St. Vital.

The two entries on the east main road in the municipality of East St. Paul being of such general excellence, your judges found, after thoroughly going into the merits of each, that one was just as good as the other and have recommended that the amount of the first and second prizes, making a total of $80, be divided equally between these two pieces. The cup to be held for an equal period by those entitled to it.

There was a very noticeable improvement in the general outline all through the municipalities and hundreds of miles of roads have been systematically maintained with the drag that were not placed in the competition. There are a few culverts and bridges that can be improved upon, but on the whole the roads over which your judges have had to travel in order to inspect the competition stretches, have been good. This is very satisfactory and it is to be hoped that the users of our highways will appreciate the efforts of their elected representatives, both in the provincial government and in the various towns and municipalities

in the Province, and that they will urge through their representatives, systematic maintenance and general improvement, consistent with the times, with a view to a network of permanent good roads interlacing every part of the Province.

The town of Stonewall and the municipality of Rockwood again deserve strong commendation for placing such a large mileage in the competition.

We would suggest that municipalities entering stretches of road should try and enter their leading roads to the city, that the stretches should be as continuous as possible and that they should enter such stretches that have most traffic on them.

On several pieces of road in the competition cards indicating same were not put up. This is not only a handicap to the competitor, as it is a condition of entry that the cards that are supplied be put up, but it makes it more difficult for the judges to locate the pieces of road. When cards are up it signifies at once that that particular piéce of road is in the competition and leaves no doubt whatever in the minds of the judges as to the piece they are inspecting; it also shows to the travelling public the difference between a piece of well-dragged road and one that is practically untouched. It is, therefore, urged that the rule in this respect be strictly adhered to.

Respectfully submitted,

(Sgd.) L. R. HENDERSON
(Sgd.) A. McGILLIVRAY
(Sgd.) W. F. TALLMAN
(Sgd.) A. C. EMMETT

Judges.

Sheep for Manitoba Farmers

The endeavor to build up a larger sheep-breeding industry in Canada, with a view to avoiding the probability of a coming dearth of wool and meat supplies, has, so far as Manitoba is concerned, taken a turn decidedly different from that originally expected.

About six or eight weeks ago the Manitoba Department of Agriculture was appealed to by the Department of the Dominion Food Controller, to co-operate, by securing orders from Manitoba farmers for ewe lambs, which were expected to be sold for slaughter by Ontario farmers. In one telegram the suggestion was offered that Manitoba farmers should take ten thousand head. After consultation with the Dominion Acting Live Stock Commissioner, and leading stockmen of Manitoba, an arrangement was made with the Dominion Government and the railways, to cover the cost of freight, and the Manitoba Department of Agriculture undertook to announce the enterprise, to secure the orders, and to distribute the sheep. Posters were then issued outlining the plan. In response, a great many Manitoba farmers wrote, requesting to be supplied with breeding ewes and ewe lambs.

The readiness of Manitoba farmers to buy this stock has evidently caused the Eastern farmers to think again, and to keep their breeding stock at home. Possibly, too, the number likely to be offered for sale was never so great as was originally expected. At any rate, the following is an extract from a telegram received a few days ago from the Dominion Department of Agriculture:

"Only 8 per cent of receipts of sheep are breeding ewes and female lambs, and of these only half are suitable types for breeding, and these are being absorbed rapidly by farmers in Eastern Canada."

In view of this, it is not expected that there will be any serious movement of sheep from Ontario to Manitoba this Fall.

But good results will follow the effort. Several farmers within the Province, who for various reasons had breeding sheep for sale, have communicated with the Manitoba Department, so that now lists are on hand of about 2,000 head of Manitoba sheep, and buyers and sellers are being brought into touch with each other.

In addition, the Provincial Department is endeavoring to ascertain whether or not sheep can be secured in Montana at reasonable prices, and Hon. Mr. Winkler petitioned the Minister of Customs, through the Dominion Department of Agriculture, to have them enter free of duty. It is announced that this petition has been granted by order-in-council at Ottawa.

Fair Wage Schedules

The fair wage schedules for the city of Winnipeg, and for the Province of Manitoba exclusive of Winnipeg, for the year from August 14th, 1917, to August 14th, 1918, have been set and gazetted during the present month in accordance with the Fair Wage Act of 1916. The Fair Wage Board for the current year was composed of five members, Goerge Armstrong, and Walter Owens representing the labor interests; W. J. Davidson and J. W. Morley representing the Winnipeg Builders' Exchange, and S. C. Oxton, deputy minister of public works, chairman. The method prescribed by the Act and followed is that the Fair Wage Board meets and prepares a schedule which it recommends to the Minister of Public Works for his approval. The minister may withhold his approval, but this year he accepted the recommendation of the board and the schedules were then published, together with notice of a public hearing at which any person or persons interested might lodge protest against any item in the schedules. Some protests and requests for revision were heard at the public meeting, which were taken under advisement by the Minister of Public Works, who shortly after issued the revised schedules, as provided in the Act. The schedules as finally revised, are as follows:

Fair Wage Schedule for Winnipeg

The following schedule shall apply to the City of Winnipeg and a radius of 30 miles therefrom:

1. Common Laborers	30c per hour	60 hours per week
2. Builders' Laborers (being those directly engaged in assisting tradesmen, not otherwise classified)	35c per hour	60 hours per week
3. Teamsters (employed directly from or on the building)	30c per hour	66 hours per week
4. Bricklayers	75c per hour	44 hours per week
5. Stone Masons	75c per hour	44 hours per week
6. Marble Setters	70c per hour	44 hours per week
7. Mosaic and Tile Setters	62½c per hour	48 hours per week
8. Terrazzo Workers	45c per hour	54 hours per week
9. Stone Cutters—		
(*a*) Journeymen	72½c per hour	44 hours per week
(*b*) Planermen and Lathemen	55c per hour	59 hours per week
10. Plasterers	70c per hour	44 hours per week
11. Wood, Wire and Metal Lathers	60c per hour	44 hours per week
12. Plumbers	62½c per hour	44 hours per week
13 Steamfitters	65c per hour	44 hours per week
14. Hoist Engineers—		
(*a*) Engineers in charge of double drum machines used for hoisting materials, operating boom and guy derricks, locomotive cranes, cableways, travelling derricks, steam shovels, clam shells, orange peels, pile drivers, irrespective of the motive power	65c per hour	60 hours per week
(*b*) Engineers in charge of single drum machines, used for hoisting materials or operating tractors, concrete mixers, pumps, syphons, pulsometers, stone crushers, air compressors, dinky locomotives, irrespective of the motive power, or operating portable or stationary boilers used on the building during construction for any of the before mentioned purposes	55c per hour	60 hours per week
15. Sheet Metal Workers	50c per hour	54 hours per week
16. Painters, Decorators, Paper Hangers, Glaziers	50c per hour	50 hours per week
17. Blacksmiths	50c per hour	54 hours per week
18. Electrical Workers (Journeymen inside Wiremen)	55c per hour	50 hours per week
19. Structural Steel and Ironworkers	55 5/9c per hour	54 hours per week
20. Asbestos Workers—		
(*a*) Journeymen	50c per hour	44 hours per week
(*b*) 1st Class Improvers	40c per hour	44 hours per week
(*c*) 2nd Class Improvers	35c per hour	44 hours per week
(*d*) 3rd Class Improvers	25c per hour	44 hours per week

21. Asphalters (including Mastic and Patent Flooring and Roofs)—		
(*a*) Finishers	40c per hour	54 hours per week
(*b*) Men engaged preparing, mixing and heating material	35c per hour	60 hours per week
22. Carpenters—		
(*a*) Journeymen	55c per hour	54 hours per week
(Except during the months of June, July and August, when the hours shall be)		50 hours per week
(*b*) Form Carpenter or Carpenter's Helper	35c per hour	60 hours per week
(Men considered by employers to be qualified for a higher rate per hour than 35c on account of the class of work being performed, to be paid not less than 55c per hour.)		

Fair Wage Schedule

Province of Manitoba (Exclusive of Winnipeg)

The following schedule shall apply to any portion of the Province of Manitoba other than the City of Winnipeg and a radius of thirty miles therefrom:

1. Common Laborers	25c per hour	60 hours per week
2. Builders' Laborers (being those directly engaged in assisting tradesmen, not otherwise classified)	30c per hour	60 hours per week
3. Teamsters (employed directly from or on the building)	25c per hour	66 hours per week
4. Bricklayers	75c per hour	44 hours per week
5. Stone Masons	75 per hour	44 hours per week
6. Marble Setters	70c per hour	44 hours per week
7. Mosaic and Tile Setters	62½c per hour	48 hours per week
8. Terrazzo Workers	45c per hour	54 hours per week
9. Stone Cutters—		
(*a*) Journeymen	72½c per hour	44 hours per week
(*b*) Planermen and Lathemen	55c per hour	59 hours per week
10. Plasterers	70c per hour	44 hours per week
11. Wood, Wire and Metal Lathers	60c per hour	44 hours per week
12. Plumbers	62½c per hour	44 hours per week
13. Steamfitters	65c per hour	44 hours per week
14. Hoist Engineers—		
(*a*) Engineers in charge of double drum machines, used for hoisting materials, operating boom and guy derricks, locomotive cranes, cableways, travelling derricks, steam shovels, clam shells, orange peels, pile drivers, irrespective of the motive power	65c per hour	60 hours per week
(*b*) Engineers in charge of single drum machines, used for hoisting materials or operating tractors, concrete mixers, pumps, syphons, pulsometers, stone crushers, air compressors, dinky locomotives, irrespective of the motive power, or operating portable or stationary boilers used on the building during construction for any of the above mentioned purposes	55c per hour	60 hours per week
15. Sheet Metal Workers	50c per hour	54 hours per week
16. Painters, Decorators, Paper Hangers, Glaziers	45c per hour	54 hours per week
17. Blacksmiths	50c per hour	54 hours per week
18. Electrical Workers (Journeymen inside Wiremen)	55c per hour	50 hours per week
19. Structural Steel and Ironworkers	55 5/9c per hour	54 hours per week
20. Asbestos Workers—		
(*a*) Journeymen	50c per hour	44 hours per week
(*b*) 1st Class Improvers	40c per hour	44 hours per week
(*c*) 2nd Class Improvers	35c per hour	44 hours per week
(*d*) 3rd Class Improvers	25c per hour	44 hours per week

21. Asphalters (including Mastic and Patent Flooring and Roofs)—		
(*a*) Finishers	40c per hour	54 hours per week
(*b*) Men engaged preparing, mixing and heating material	35c per hour	60 hours per week
22. Carpenters—		
(*a*) Journeymen	50c per hour	54 hours per week
(Except during the months of June, July and August, when the hours shall be)		50 hours per week
(*b*) Form Carpenter or Carpenter's Helper.... (Men considered by employers to be qualified for a higher rate per hour than 35c on account of the class of work being performed, to be paid not less than 50c per hour.)	35c per hour	60 hours per week

The Manitoba Insurance Act

The Manitoba Insurance Act, administered by the department of the Provincial Inspector of Insurance, is one of which comparatively little is known by the general public, although it regulates and controls within the Province a business which affects a very large proportion of the population.

The Manitoba Insurance Act provides for the licensing and control of all insurance companies doing business within the Province and makes it an offence not only for any licensed or unregistered companies to do business in the Province, but also makes it an offence for any person to place insurance in any such companies not licensed nor registered under the Act. It provides for an annual inspection of the books and business of insurance companies so that the condition and affairs of such companies may be known to be safe for the insuring public. It requires all companies to make a deposit with the Provincial Treasurer. It also provides that every insurance agent or broker soliciting business in the Province must be licensed, and as in a majority of cases it is such agents that come in direct contact with the public and as in many cases the agent is the only person known to the citizen placing insurance, some detail of the law regulating insurance agents may be of interest to the public.

Control of Agents

The privilege of license for an insurance agent is limited to bona fide residents of Manitoba who must have secured an appointment from a duly registered or licensed company. This is intended to eliminate illegitimate agents, unscrupulous solicitors and undesirable companies. The insurance companies can secure the cancelling or revocation of any agent's certificate if he collects any premium from the assured and retains the same beyond the term stipulated in his agency contract or agreement, or if the agent has been guilty of any misrepresentations or fraud, deceit, dishonesty, or any violation of the Insurance Act of the Dominion of Canada or the Manitoba Insurance Act. It also provides that an agent can represent only one life insurance company at a time, which enables the company to have full control over the agent for the period of his contract.

Any citizen has the right to demand from any agent or solicitors of insurance evidence of his authority, that is, his license and if he holds such a license, the prospective assurer will know that the solicitor is representing a duly qualified company, a company holding a license or a certificate of registration for the purpose of operating within the Province. He will know that it is a company which has deposited either with the Provincial Treasurer or with the Dominion government securities to guarantee the re-insurance of its policyholders in the event of necessity. In this way the public is enabled to avoid getting into the hands of unscrupulous agents and unlicensed and unworthy companies. Citizens may also avail themselves of the privilege of lodging a complaint against any agent holding a license should he be guilty of misrepresentation, fraud, deceit, dishonesty. If such complaint is well founded the superintendent of insurance may revoke his license. There is a penalty for any person soliciting insurance without a license. There are over 3,000 insurance agents in the Province of Manitoba.

Molybdenite Prospects in Falcon Lake District

Report of Justin S. Delury, Department of Geology and Mineralogy, University of Manitoba

The prospects in which the molybdenite is found lie in Eastern Manitoba about eight miles west of the Ontario boundary line and between the Canadian Pacific Railway and the Greater Winnipeg Waterways Railway. They are a little south of the Star Lake district described by Wallace in the report of the Public Utilities Commission of Manitoba for 1916, and west of an area described by Parsons in the annual report of the Ontario Bureau of Mines, Part 1, 1912.

The claims showing the presence of molybdenum can be easily reached by canoe from Ingold on the C.P.R. and from a point on the G.W.W.R. where it crosses the Falcon River.

General Description of District

The country presents a typical glaciated surface. Rocky ridges covered principally with jack-pine alternate in places with lower levels covered with popular, birch, spruce, etc., and in other parts with muskegs. Rock exposures are abundant and the country generally is easily prospected. Timber for mining operations is abundant, and this feature together with the proximity of two railroads gives the area a good location should it develop in a mining way.

A series of ancient rocks, largely basic lavas, have been intruded by at least two distinct bodies of granite and possibly by more. The ancient lavas were squeezed and sheared at the time of the granite intrusions so that now they appear as basic chloritic and hornblendic schists standing vertically or nearly so and bounded by vertical walls of granite on either side. These schists, the oldest rocks of the district, are classed as Keewatin in age. The schists in this and surrounding districts appear as bands lying between granite masses. These bands are best regarded as the residual parts of an extensive formation and as occupying troughs in the granite. As the schists are vertical in position and as the bands stretch for long distances, it is likely that these troughs are of considerable depth.

There are at least two distinct intrusions of granite represented in the district. Firstly, a gray granite intruded the Keewatin rocks and there is evidence in the district that it threw off some porphyries and likely some felsitic phases as dykes in the Keewatin. Secondly, a red granite intruded both the older granite and the Keewatin formation. In this area the bulk of the red granite came into the previously formed granite, but tongues in the form of pegmatite and other acid dykes were sent into the Keewatin. The intrusion of these pegmatite dykes is the important geological event in connection with the molybdenite occurrences. In most parts of the district the contact zone between the granites and the Keewatin is quite wide but near the molybdenite deposits there is a more abrupt change from one formation to the other. Further particulars regarding the rocks and their relations in the district as a whole may be obtained from the above mentioned reports of Wallace and Parsons.

Near the molybdenite occurrences are found the following three formations:

(1) Dark green to black Keewatin schists standing nearly vertically and striking southwest with the granite contact.

(2) An earlier gray granite which threw off porphyritic and felsitic bodies into the Keewatin rocks and which probably functioned in the vein formation in other parts of the district.

(3) A later red granite which came up mainly in the earlier granite and which threw out differentiated products such as aplites and pegmatites into the adjacent schists. With these acid off-shoots from the granite came the molybdenite.

The pegmatite dykes occur in the earlier formed granites and in the schists adjacent to the granite contacts. It is those dykes found in the schists that have proved to be of economic interest. In most cases they plainly have been intruded parallel to the schist planes but at times they cut the schists at different angles, usually small but in a few instances straight across. Those dykes with the best showing of molybdenite are parallel to the schistosity of the adjacent rock and to the granite contact, and lie within a few hundred feet of this contact.

The minerals which make up the bulk of the pegmatites are feld-spars, quartz and muscovite. Red garnets in small crystals were prominent, especially in some of the finer grained portions of the pegmatite. Beryl crystals were noticed in two or three different places. Molybdenite is fairly well distributed through the pegmatites though it cannot be said to be regularly distributed.

In texture the pegmatites vary from coarse to fine. Typically the individual masses of mineral are from one to five or six inches across. This coarse grained type grades into finer grained varieties and in part to graphic granite and aplite.

The molybdenite occurs in a variety of forms: (1) Six-sided prisms tapering slightly towards the ends; (2) radiating lamellar masses; (3) fine-grained massive; (4) lamellae and small flakes. The first two types are the more abundant; they are found principally in coarse or medium grained pegmatite and appear to be a primary constituent of that rock, that is, they formed during the solidification of the magma or solution that gave rise to the pegmatite and associated types. In parts of the dykes are aplites which carry molybdenite in small crystals and flakes which are apparently primary constituents of the rock.

Detail of Present Claims

The preceding general description is supplemented by the following extracts from notes written in the field.

On the contact on the Gull claim dark gray porphyritic granite and granite porphyry are intruded by red granite and pegmatite. Southeast from this outcrop is a contact zone of interbanded black schist, pegmatite and aplite. About two hundred feet southeast of this contact is a pegmatite dyke or vein striking S. 60 degrees W. and dipping slightly to the southeast. Roughly parallel with this dyke and cut by it is a narrow band of granite porphyry, apparently an offshoot from the earlier gray granite. The pegmatite dyke here is about four feet wide. The bulk of the dyke is made up of coarse crystals but it passes in parts into fine grained varieties carrying small red garnets. The molybdenite is in lamellar masses up to two or three inches in diameter and in scales and small crystals. A very acid layer, a few inches in thickness, cuts across the dyke with a steep dip; it contains bunches of fine grained molybdenite, some of them several inches in diameter. A flexible greenish colored mica is prominent in parts of this dyke.

On a hill on the Smuggler claim is a dyke about eight feet in width which has not been opened on the top though it shows scales of molybdenite on the outcrop. Just below the hill where it passes into the muskeg part of the dyke is exposed. Here it is quite coarse grained and a shot brought out several large crystals of the mineral. Between a half-pound and a pound of molybdenite were shown on about a square yard of exposed pegmatite. At other points on the Smuggler traces of the mineral were seen in an unopened vein which could be traced for about two hundred feet with an average width of from two to four feet.

On the Tom Boy claim is a dyke varying between three feet and eight feet in width. At several points on the outcrop crystals of molybdenite were seen. An opening at the widest part of the vein showed a mixture of fine and coarse pegmatite carrying all the usual minerals. A fine grained garnetiferous phase forming a band from one to two feet in width carries abundant small grains and scales of molybdenite. Some large crystals and lamellar masses were also seen in this opening.

About three hundred feet from the granite contact on the Winnipeg claim a dyke from three to four feet in width outcrops. Some medium sized crystals and flakes of molybdenite were seen in an opening here.

On the Lucky Jack claim a vein which had been followed from the Union Jack, with a width varying from two to eight feet was found to be opened at a point where the vein had a width of three to four feet. The best showing of molybdenite crystals were seen here. Some individual bunches of the mineral would weigh several ounces.

On the Union Jack an opening was made on a dyke four to five feet in width. Molybdenite is found here in large crystals and groups of lamellar masses.

At a point on the Smuggler Claim a narrow pegmatite dyke cuts across the formation, and intersects a previously formed vein of reddish quartz, which is parallel to the schistosity. This reddish quartz carries lamellae of molybdenite in cross fractures; it was apparently introduced by the pegmatite and is secondary in the quartz vein.

To the north-west of Barren Lake, at a point indicated on the map, are some claims with small showings of molybdenite. Not far from the granite contact is a large irregular pegmatite mass consisting mainly of orthoclase crystals, in a matrix of quartz with muscovite. This is one of the largest pegmatite masses seen in the schists, but there were no signs of molybdenite.

A little farther from the granite, on the Hall and Jim Gordon Claims, is a vein two or three feet wide, which could be traced some distance. It consists mainly of quartz, but carries considerable feldspar near the walls. Some medium-sized crystals of molybdenite occur in the vein. This is doubtless a more acid phase from the granite. It is interesting in that it shows the presence of bismuth in small amounts and is said to carry low values in gold, which probably occurs with some arsenopyrite noticed in the vein.

Molybdenum and its Minerals

Little space will be used in a discussion of molybdenum and its minerals, occurrences in other parts of the world, ore dressing, etc., as these features have been well treated in recent available literature. Attention might be called to some of this literature.

"Report on the Molybdenum Ores of Canada," by T. L. Walker. Ottawa, Department of Mines, Mines Branch, 1911.

"Molybdenum; Its Ores and Their Concentration," by F. W. Horton. Washington, Bureau of Mines, Department of the Interior, 1916.

"Molybdenite and Its Occurrences," by Sydney H. Ball. *Engineering and Mining Journal*, New York, Aug. 25, 1917.

There has been an increasing demand for molybdenum since the beginning of the war. Like tungsten it is of great value as a steel hardener, and it is being employed largely in the materials of war. High prices have prevailed, and phenomenal prices have been offered at times when supplies were low.

Molybdenite, the sulphide of molybdenum, is the most important source of the metal, and has the widest distribution of those minerals carrying the metal. Molybdite and other oxidized products are found commonly with molybdenite, but are unimportant as a rule. The yellow powder of molybdite was noticed on some of the weathered molybdenite in the Falcon Lake prospects. Wulfenite, a lead molybdate, is produced from the oxidized ores of some veins in the Western States.

Molybdenite has about sixty per cent of the metal molybdenum. It is a bluish-black metallic looking mineral, much resembling crystalline graphite. It has a much higher specific gravity than the latter mineral, and its lamellae or cleavage flakes are more tough and flexible.

From the fact that molybdenite tends to break into thin flakes rather than into a fine powder, the concentration of the mineral from its ores has caused considerable difficulty, notwithstanding its high specific gravity. Lately considerable progress has been made over the older cobbing and screening processes, by means of the introduction of flotation methods. It is claimed that now fairly complete separations in low grade ores are possible. Electrostatic methods are also possible with the Falcon Lake type of ore.

There are several impurities commonly associated with molybdenite that are difficult to separate, and which lower the value of the recovered metal. The commonest of these are copper and bismuth minerals, as well as several metallic sulphides. None of these impurities are present in the Falcon Lake pegmatites, though a little bismuth was noticed, associated with molybdenite, in a quartz vein, which appears to be a very acid phase of the pegmatites.

Economic Possibilities

In speaking of the economic possibilities of the district, it may be said that molybdenite has been found over a considerable area, and seems to be fairly persistent through a certain type of pegmatite vein, which is quite prominently developed in the schists for some distance from the contact with the granite.

From the nature of the mineral, it is not apt to show prominently on the outcrop, so that it is necessary to blow off the surface in order to get a proper idea of the molybdenite content. In this connection it is of interest to note that invariably, where work has been done on the veins, the showings of molybdenite have been much better than would be judged possible from examinations of the outcrops. Owing to the manner of

occurrence of the mineral and its tendency to irregular distribution, it is almost impossible to judge of the mineral content of the ore, as seen on the dumps or in the excavations. It was judged from a hasty inspection of these that the molybdenite content in most cases would be measured in tenths of one per cent. Sampling for analysis is almost impossible without excavating and crushing on a large scale. It can be said, however, that molybdenite occurs fairly generally distributed throughout the pegmatites, and so far as can be judged from excavations already made, in quantities sufficient at least to encourage further development and prospecting on the properties already staked, and in other parts of the district adjacent to the granite contact.

General Conclusions

There is a possibility of finding richer bodies and perhaps larger bodies of the type already exposed. Considering the amount of prospecting and excavating that has been done, and the showings made, it seems almost certain that something better will be exposed with further work. It is of interest in this connection that Lawson reported the occurrence of molybdenite in veins on Quarry Island, near the Sultana mine, in his report on the Lake of the Woods region, in 1885. Parsons, in his report, mentions molybdenite as occurring on Shoal Lake near the Mikado Mine, in a quartz vein cutting gray granite, and also at other points in the Lake of the Woods region.

The writer suggests that prospecting might be made economical by cobbing and hand-picking the ore as it is brought out. This is the simplest way of handling molybdenite ores of the type presented at Falcon Lake, and very little equipment is required. The dump after the hand-picking could be preserved, sampled and analyzed, pending a development of the district and of the molybdenite industry to the possible stage when a mill might be introduced. In this way prospecting will be simple, sane and economical. If prices hold good it is possible that a large part of the prospecting expenses might be paid for by hand-picked molybdenite. While values have been rising and the present market is high, there is no telling what the future may bring in the way of demand and values for molybdenum, so that it is only safe to advise those interested in the properties to watch developments in the molybdenum industry very closely.

October, 1917.

The Fur Trade

In the good old days of fur trading the country of which The Pas is the centre was known to the fur traders as the "muskrat" country, and is of particular historical and economic interest. It was, and is, one of the richest fur producing districts on the continent, and at the time of the rivalry between the Hudson Bay Company and Northwest Company was the chief battle ground between the traders of these companies. It was first occupied by representatives of the latter company, who reached it from Montreal. Subsequently the former company sent their traders right into the district from Port Nelson in order to partake of the immense profits resulting from the trade therein.

As nearly as can be estimated by careful enquiry from various sources of information, the value of the furs which passed through The Pas during the last season and for which this town was the market approximated a quarter of a million dollars. This would take in all the region north and west of the Hudson Bay railway, and to some extent south and east thereof, but would not include Norway House district and territory lying north and east, stretching towards Hudson Bay, in which also a very considerable fur trade is carried on.

This is an important industry and with careful supervision will not only continue but might materially increase as years go by. The Hudson Bay railway affords facilities for bringing in the season's catch hitherto not enjoyed and trappers are therefore penetrating more remote regions than formerly. There is no reason why districts back from the railway should not continue to produce this valuable commodity in increasing quantities. In the greater part of the north country fur for many years to come will remain the chief source of revenue.

Wintering Bees in Manitoba

By R. M. Muckle, Provincial Apiarist

The beekeepers of Manitoba lose at least one-sixth of their colonies every Winter. This is the average, and it is not below the loss elsewhere.

Much of this loss is due to not having the bees properly prepared for Winter Lack of quality of stores, poor queens and excessive swarming, all take their toll, and these losses are often attributed to improper cellar Winter conditions.

It is important and necessary, then, that we know how to prepare our colonies for Winter; as much of the success of Wintering depends on the conditions of the colony when going into their Winter quarters.

Since weak colonies so frequently succumb in Winter, it is obvious that a too rapid increase in the number of colonies in Summer is unwise. Aside from the loss in the honey crop, too rapid increase often means too rapid decrease, because of danger of weak colonies dying during the Winter. In Manitoba we will get our maximum profit by allowing the colonies to swarm only once in the early Summer.

We must have out colonies strong in young bees when going into their Winter quarters, because in a strong colony many bees in the centre of the cluster may be engaged in heat generation, and there will still remain many to serve as insulators. Old bees that have been worn out gathering in the late Summer soon succumb, thus leaving the hive in a weakened condition.

To have all hives well filled with young bees, in the Autumn, it is important that we have the right kind of queen bee; one that will lay a large number of eggs, and continue to deposit eggs until the cold weather sets in. The writer's experience has been that it is unwise to keep a queen bee longer than two years; in fact, in Manitoba they seldom, if given plenty of room to lay, live this long. It is well to have the hives protected in the Fall from the cold north and west winds, as this protection helps to keep the colony in good condition for Winter.

Much of our Winter loss is due to inadequate stores. A colony of bees in Manitoba will eat about ten pounds of honey during the time they are confined by the cold. Leave the bees at least thirty pounds of honey, as with this amount they will have sufficient to do until they gather again in the Spring. Be careful not to leave honey from year to year in the brood chamber, as this honey will granulate during the Winter and cause loss. Out late, fall gathered honey often candies quickly, and is therefore not the best for Winter food.

If it is necessary to feed, a sufficiently thick sugar syrup can be made of two parts of sugar to one of water, by volume. To this add one ounce tartaric acid to each 50 pounds of sugar, adding while the syrup is being heated. This syrup should be boiled 15 minutes. The acid helps to invert the sugar, and thus retard its granulation in the combs.

The Best Winter Quarters

The principal way of wintering bees in Manitoba is in cellars or basements. Do not place the bees in their Winter quarters until you think they have had their last fly for the year. This is usually about the first week in November. Another, and perhaps better, plan, is to have the hives well protected on their Summer stands with straw, or some other material, and put them in the cellar when cold weather commences. A satisfactory plan followed by many, is to have their bees well protected outdoors, and then place them in the cellar or basement when the temperature can be controlled so that it will remain about 45 degrees F. Ideal cellar Winter conditions are an even temperature, around 45 degrees F., freedom from dampness, proper ventilation, total darkness and quietness.

Have the cellar or basement well built, so that the inside will not be affected by the outside temperature. Many make the mistake of allowing their bee-cellars to become too cold. This causes a slight movement of the bees in the cluster to generate heat. Bees are expensive heat producers, as this muscular motion, if long continued, wears the bees out, causing early death, besides necessitating increased consumption of stores, which will often bring about dysentery. Many follow the practice of having a pipe from the furnace to the room where the bees are kept, and in this way are able to regulate the temperature. Others use an oil stove with good results.

In many of our cellars excessive dampness often causes considerable loss. To prevent dampness, have the proper temperature, sufficient ventilation, and, if necessary, use some hygroscopic substance such as lime. The best results are obtained when the hives are placed up from the floor at least one foot, the cellar having two ventilators, one going right down to the floor, the other in at the ground level.

Beginners often make the mistake of trying to examine the bees during the Winter to ascertain, if possible, the condition of the colony. Have proper cellar conditions and do not disturb the bees until they are to be placed on their Summer stands in the Spring.

Wintering Out of Doors

A number of our beekeepers in Manitoba winter their bees outdoors by packing them with oat chaff, saw-dust, or dry leaves. From experiments conducted at the Agricultural College, we have found that, for best results, bees wintered in this way must be populous, and have at least eight inches of packing on the sides, and one and a half feet above. It is impossible to give too much packing. The writer would not advise those who have good cellars or basements to try outside wintering.

Several beekeepers winter their bees in camps, as outlined in some of our bee books. From experiments conducted by the writer, this method of wintering is a success only where the soil is dry and sandy.

Many are able to bring their bees through the Winter alive, but in very poor condition. Successful wintering means having the colonies populous in the early Spring, so that they will be able to gather an abundant harvest during the honey flow.

Take the bees from the cellar when the willow comes in bloom. Protect them from the cold north and west winds in the Spring, and if necessary, feed to build them up for Summer.

Much of our Winter loss is due to carelessness on the part of the beekeeper. If bees are worth keeping, they are worth the necessary attention. Care and attention will insure you a large honey yield in Manitoba, nine years out of ten.

Regulation of Slaughterhouses

Following is the text of the new regulation of the Provincial Board of Health in respect to the slaughtering of beef and other animals in Manitoba, which became law on October 2nd, when the regulation was promulgated. It will be observed that, as previously announced, permits will date from January 1. Owners of existing slaughterhouses therefore have until that date to put their places in shape, if they require changes or alterations, in order to qualify for permit.

Pursuant to authority contained in "The Public Health Act," the Provincial Board of Health provides, orders and regulates as follows:

(1) Whenever in these regulations the word "slaughterhouse" is used, the same, except the context otherwise requires, shall mean and include any place where cattle, sheep or swine are killed for subsequent use as food for human consumption, and shall include abattoirs.

(2) Any person, firm or corporation desiring to slaughter any of the animals mentioned in paragraph 1, for use for food purposes, shall, before engaging in such business, make application in writing to the Provincial Board of Health, addressed to the Provincial Epidemiologist, for a permit so to do, which application shall be signed by the person, firm or corporation making the same, and shall specify the location of the house or place where it is purposed to slaughter such animals. Upon filing of such application with the Provincial Epidemiologist, an officer of the Board shall inspect the slaughterhouse, and if the same be found to comply with the provisions of these regulations, the said Provincial Epidemiologist shall issue the permit applied for, and cause a record thereof to be kept in his office.

(*a*) Every such permit shall be for a period from the first day of January of the year of issue until the first day of January of the next following year; the first of such permits to be issued after the first day of January, A.D. 1918. All permits shall be renewed annually.

(3) All slaughterhouses for which permits are issued hereunder shall be kept in a sanitary condition at all times; and it is distinctly provided that insanitary conditions of such places shall be deemed to exist whenever and wherever any one or more of the following conditions are found, that is to say, if the slaughterhouse is dilapidated and in a state of decay; if the floors or side walls are soaked with decaying blood or other decaying matter; if cobwebs or other evidences of filth or neglect are present; if maggots or filthy pools or hog wallows exist in the slaughterhouse yard or under the slaughterhouse; if storage hides kept in slaughterhouses are in pools of filth, or infested with maggots, or giving out vile odors; if the water supply used in connection with the cleansing is not pure and unpolluted; if odors or putrefaction exists therein; if bones or refuse have been allowed to accumulate and are not burned or buried, or if carcasses are kept in unclean, bad-smelling ice boxes, refrigerators, or storage rooms.

(4) Every person granted a permit under provisions of these regulations shall cause his permit to be legibly placed and maintained in a conspicuous place in his slaughterhouse.

(5) The Provincial Epidemiologist, acting on behalf of the Board, shall have the power of revoking permits granted under the provisions of these regulations in all cases where a nuisance or an insanitary condition exists in any slaughterhouse, or upon the premises upon which the same is located.

(6) Every person, firm or corporation carrying on a slaughterhouse shall be required to substantially comply with the provisions relating to slaughterhouses contained in "The Public Health Act," save as herein otherwise provided.

(7) Any member of the Board of Health, or officer thereof may, and shall, have the right at any time to enter any and all slaughterhouses, and the premises connected therewith, and no person shall prevent or hinder any of such persons from so entering.

(8) The following annual fees shall be paid by persons applying for and receiving permits under the provisions of these regulations—

(9) Every owner of a slaughterhouse in cities, the sum of $10.00; every owner of a slaughterhouse in towns, $5.00; every owner of a slaughterhouse in villages, $2.00; every owner of a slaughterhouse in rural municipalities, $1.00; abattoirs, wherever located, the sum of $25.00.

(10) No person, firm or corporation shall carry on or engage in the business of a slaughterhouse in the Province of Manitoba from and after the first day of January, A.D. 1918, without having applied for and received a permit so to do, pursuant to the provisions of these regulations.

(11) During the existence of these regulations the provisions contained in sections 196, 197 and 198 of "The Public Health Act" are superseded and declared to be inoperative and of no effect.

Men Wanted for Lumber Camps

The labor bureau of the Provincial Department of Immigration and Colonization is still actively at work although the rush attendant on the placing of farm help for the harvest and Winter is over. The bureau is advertising for 2,000 men to work in the lumber camps of the Province and has already met with a fair measure of success, although men willing to go into the lumber camps are scarce in spite of good wages offered. This new departure in the work of the department has two objects in view, first to aid as far as possible in getting the men needed for an important industry that adds materially to the annual production of the Province, secondly to keep in the Province through the Winter as many men as possible so that they may be available for work on the farms next Spring. For the latter reason particularly, the work of the bureau has been directed largely at the farm laborers from other parts who have worked in the harvest fields and threshing. The argument that they can get constant work in Manitoba and save the money they would otherwise spend in travelling back east or south has induced a good many to decide to spend the Winter in Manitoba. Wages prevailing in the lumber camps are advertised at from $50 to $60 a month and board. The department has placed posters in public places in all parts of the Province and farmers are being asked to lend their aid by advising men leaving their employ to take work in the Province for the Winter.

Bee Culture Circulating Library

Bee-keeping is one of the most profitable and least troublesome of the various "side-lines" that a Manitoba farmer can take up, but the successful handling of bees requires a certain amount of specialized knowledge. Such knowledge might best be acquired at first hand by observation of the methods of a neighbor who has made a study and a success of bee-keeping, but it can readily be acquired by following instructions that can be obtained at any time by anyone from the Provincial Apiarist. A well-stocked library of standard books on bee culture is kept by the apiarist and is available to any person in Manitoba. It includes the following publications:

Name of Book	*Author or Publisher*
A.B.C. & X.Y.Z. of Bee Culture	A. I. & E. R. Root
Advanced Bee Culture	Hutchinson
Fifty Years Among the Bees	Dr. C. C. Miller
Langstroth Dadant on Honey Bee	Langstroth
Manual of the Apiary	Cook
Doolittle's Queen Rearing	Doolittle
How to Keep Bees	Comstock
Quinby's New Beekeeping	L. C. Root
A Modern Bee Farm	S. Simms
Wax Craft	Cowan
First Lessons in Beekeeping	Newman
Doolittle's Out Apiary	Doolittle
Towsend Bee-Book	Towsend
Natural History of Honey Bee	
The Life of the Honey Bee	Maeterlinck
The Humble Bee	F. W. L. Sladen
The Anatomy of the Honey Bee	Snodgrass
The Lore of the Honey Bee	Ticknor Edwards
The Honey Bee	C. G. Hewitt
Destruction of Bee Diseases by Heating	U.S. Dept. of Agric.
The Temperature of the Honey Bee Cluster in Winter	U.S. Dept. of Agric.
The Truth About Sweet Clover	A. I. Root
Bee Diseases in Ontario	Morley Pettit
Alexander's Bee Book	Alexander
Bees and How to Keep Them	F. W. L. Sladen
Productive Beekeeping	Frank C. Pellet
Beekeeping	Dr. E. F. Phillips

In order that the Bee-Culture Circulating Library may best serve the beekeepers of Manitoba, the following rules should be observed:

1. All requests for books should be sent to R. M. Muckle, Provincial Apiarist, Department of Agriculture, Winnipeg.

2. One book only may be drawn at one time.

3. A book may be retained for two weeks from date of receipt, but when possible should be returned sooner in order that they may be read by as many as possible.

4. A book may be renewed for a further period if found desirable, and if the book in question has not been called for by another person. When renewal is required, a request must be sent in advance, stating for how long it is desired.

5. Each person will be responsible for the book in his or her possession.

6. Care should be taken to see that the books are well packed to avoid damage in the mail.

7. The cost of mailing is paid by the Department of Agriculture one way. The return carriage is to be paid by the reader.

8. The receipt form sent with the book should be promptly returned. When returning books it is necessary that a post card should be sent stating that the book has been returned.

9. Care should be taken that the books do not go into homes where there is contagious sickness.

Marketing Poultry

By M. C. Herner, Prof. of Poultry Husbandry, Manitoba Agricultural College

This is again the season when the surplus farm chickens find their way to market. This year, as during other years when we have had a mild Fall, the crop of chickens tends to move later in the season than when the Fall is rough, cold and wet. When the latter conditions prevail, farmers are always in a hurry to get rid of their stock. Prices usually are better early in the season, and the feed required is also less.

This season we are somewhat at a loss to size up the situation satisfactorily. The demand for dressed chickens has not been nearly as good during the Summer and Fall as in former seasons. It has been very erratic. During other seasons broilers have always been in demand; but this year the call for them has been only very limited, and the prices have been much lower. Some poultry raisers argued that the customers boycotted them; but we believe it was only a natural result of the high cost of living. Dressed poultry, especially broilers out of season, must be considered more or less of a luxury; and a luxury at best is high priced.

Coming to conditions at this time of year, we find them considerably changed. This is the natural season for marketing poultry, and prices are correspondingly lower. In fact, prices right now are so low as to make meat a far cheaper article of diet than any other, except fish. Right here it might be stated that the best advertisement the poultry industry has ever had is the fact that where the price of all other meats has gone up sky high, corresponding to the price of feed, those of poultry have remained comparatively low, thus encouraging larger consumption of poultry. The effects of this are likely to be seen this Fall. The price of chickens this Fall is no higher than a year ago, and yet the price of feed is about double that of last year.

At this time it might be well to point out the danger we see in poultry being marketed in poor condition. Feed of all kinds is high priced, and there is a tendency to rush in the farm chickens in a rough, unfinished condition. Even though feed be scarce, it will pay to finish the poultry properly. On an ordinary farm, where there are forty to fifty surplus cockerels, it would be well to make two shipments, selling off the bigger ones as early as possible, and the smaller ones later.

Under no condition should farmers sell off pullets that are likely to make Winter layers. It will, however, pay a farmer to go through his flock carefully right now, and sort out all the old hens and sell them off, or use them at home. Probably they are worth just as much to his household as food, as to somebody else. These do not require any special fattening; they are ready to go any time.

For Returned Soldiers

By an order-in-council dated October 12th, 1917, the government has authorized the remitting of fees for first examinations or licenses for returned soldiers presenting themselves for examination or license in any of the occupations carried on under license from the provincial government. These occupations include chauffeurs, motion picture operators, steam engineers, journeymen electrical wiremen, passenger and freight elevator operators, etc. The remission will be granted to any man who produces to the examiner or officer issuing licenses his certificate of honorable discharge from the Canadian Expeditionary Force, the Royal Canadian Navy, the Imperial Army or the Imperial Royal Flying Corps. It is provided that the remission shall apply only on the first successful examination or previous unsuccessful or on the issuance of the first license.

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Edited by J. A. Macdonald, Publicity Commissioner. *Philip Purcell, King's Printer.*

22

BUY VICTORY BONDS

It is the bounden duty of every citizen of Manitoba to put every dollar he can possibly spare into Canada's VICTORY LOAN.

All cannot go to the trenches. Some are too old, some are too young, some have duties and responsibilities which make it impossible, some are as much needed here as in the trenches. But every one who has to remain at home can do his bit in some other way.

Right now the VICTORY LOAN is the way. It is the long range gun with which you can shell the German trenches, and every bond is a shell that is certain to reach its mark. Buy Victory Bonds.

Don't make the mistake of thinking that you are being asked to GIVE anything. You are not! You are being GIVEN the chance to LEND to your country and you get the best security on earth. And at the same time you show your real patriotism, you help to win the war, you hasten the day when your son and your neighbor's son can return to home and work. It is really a PRIVILEGE, but none the less your DUTY. Buy VICTORY BONDS.

Another thing. Don't forget that your money does not go out of Canada. It is spent right at home, to pay for the food, clothing, arms and ammunition for OUR boys on the battle front. It helps production, provides employment, speeds up business. Buy Victory Bonds.

VICTORY BONDS are as safe as Canada—a first charge on the whole nation. They bear interest at 5½ per cent—they are better than cash. They are repayable in 5, 10 or 20 years—you can buy which you prefer. No better saving proposition has ever been offered. SAVE and SERVE. And if at any time you find it necessary to realize cash quickly, your Victory Bonds can be sold for cash at any time.

Put your money in Victory Bonds and

FIGHT, SAVE, EARN

More Bacon Production Needed

By Hon. T. C. Norris, Premier of Manitoba

I appeal to Manitoba farmers, as a patriotic duty, to raise as many pigs as possible during the next twelve months. The food situation in France and Great Britain is exceedingly urgent, and there is an espeical call for bacon supplies.

Figures carefully prepared some months ago showed that the European swine population had decreased since the war began by over 32 million head, or 13 times as many pigs as there are in all of Canada and 100 times as many as we own in Manitoba. This is in addition to an equally striking decrease in cattle and sheep. And the figures are mounting every week. A few days ago bacon was selling in London, England, for 60 cents per pound.

While no formal pledge as to future prices of live hogs has been made by the Dominion Government, there is a practical certainty of high figures for a long time to come. In the United States the food controller has pledged the Government's moral support of a price at Chicago not lower than about $15.50. It is, indeed, almost certain that this figure will on the average be exceeded. At the moment of writing the price of first class hogs in Winnipeg is 16 cents per pound. These figures will permit of profitable hog feeding even at considerably higher prices for feeds than prevail at present. But even though grains and feeds should go yet higher than they are now, and even though the feeding of grain to hogs should, in itself, entail no profit but rather an actual monetary loss, any farmer growing his own feed could still very well afford to accept the profits that his hogs would yield him.

But, quite aside from profits, I wish to make my appeal on patriotic grounds. The shortage of bacon supplies in France is now, and will be, very severe. The question of food is a question of life or death.

The Manitoba Government is setting the example by breeding a largely increased number of sows on each of the farms in connection with the various provincial institutions. It would seem to me, too, to be a safe and patriotic act for every Manitoba farmer to follow the example.

Every Manitoba farmer will know just at what time of year he wishes his litter to arrive. It may be pointed out that sows bred during the first week in January would farrow shortly after the middle of April, the period of pregnancy being about 112 days. Let every farmer breed his sows to suit his own requirements.

The main points are as follows:

1. The meat shortage of the Allies is acute.
2. No other class of animal so lends itself to a rapid increase as the hog.
3. The price of pork is certain to be very high.
4. By immediate decision and action enough sows can be bred to double, treble, or even quadruple Manitoba's pork production in 1918.
5. By sowing the proper kinds of forage next Spring, Summer feeding need not be all on dry grains.
6. There is no other part of the world so well able to help the Allies in this cause as is Manitoba.

Correction

In the list of winnings of Manitoba farmers at the International Dry Farm Products Exposition at Peoria, Ill., published in the October number of the *Bulletin*, first prize for rye was credited to John Strachan, of Pope, Man., and the sweepstakes for rye to John Strachan, but without any address shown. Both these prizes were won by and should have been credited to John Strachan, of Beulah (Miniota P.O.), the error having arisen in interpreting the telegram from Peoria announcing the results.

session any such nest or eggs, except in pursuance and by virtue of a special permit issued under this Act.

No person shall at any time have in his or her possession any of the birds or any of the parts of any of the birds protected by this Act, or any nest or eggs of any such birds, except in pursuance and by virtue of a special permit issued under this Act.

Birds not protected: eagles, falcons, goshawks, sharpshinned hawks, duckhawks, pigeon hawks, hoopers or chicken hawks, crows, ravens, blackbirds, rusty grackle, purple grackle and English sparrows are not among the birds protected by this Act.

Special—Seasons Closed Absolutely and Indefinitely

Elk deer, prairie chicken, partridge, other grouse, etc., must not be pursued, shot, killed or taken at any period of the year.

New Bulletin on the Gas Engine

The successful farmer of today must be an engineer. Thirty years ago the fanning mill or the sweep reaper were about the most complicated machines with which the farmer had anything to do. Then the self-binder came along, and he had to master that. Today thousands of farmers are buying gas engines, and they find these the most "tricky" machines with which they ever had experience.

There is a special reason why so many men find themselves baffled when their gas engines go wrong. In handling all the other machines on the farm, the owner has to deal only with plain mechanical principles. When he takes his gas engine in hand, he not only has wheels and shafts and cams to deal with, but he must be an electrician as well. To the untrained man there is more that is elusive and mulish about a balky gas tractor than about a railway locomotive. When, for instance, the spark plug points become short circuited, it takes a man who knows what he is looking for and how to find it, really to locate the trouble.

With the thought of helping gas engine operators, the Manitoba Department of Agriculture has published a new 40-page bulletin entitled "The Gas Engine." This bulletin is written by Mr. A. C. Campbell, gas engine specialist of the Extension Department, of Manitoba Agricultural College. It contains 34 illustrations, and very clearly presents the whole subject of gas engine operation.

A very valuable feature is a table upon "gas engine troubles," showing the operator how to diagnose a gas engine "case" as a doctor would diagnose the physical ailment of a patient. The operator begins with the symptoms, and with a list of all the possible causes of such a symptom, proceeds to find which of these is the active one. Next he looks over the list of all the local possibilities for such a cause; and thus he definitely traces his way back to the origin of the trouble.

This bulletin will be used by the Extension Department as a text book in its gas engine short courses; and it will also be sent free to Manitoba farmers.

For a free copy, address the Publications Branch, Manitoba Department of Agriculture, Winnipeg.

Mothers' Allowances Commission

There has been a very considerable increase in the work of the Mothers' Allowances Commission since reference was last made to it in the *Public Service Bulletin.* During the current month of November, 150 mothers without other support and with 516 children dependent upon them, have been in receipt of the allowances from the Provincial Government, under the arrangement by which the Government levies upon the municipalities at large, throughout the Province, the levy of one-half of the allowances granted.

The commission, whose chairman is now Mr. George Fisher, local manager of the Scottish Co-operative Wholesale Society, has given a popular interpretation to these allowances by describing them as salaries paid to these mothers for the service they render to the State in bringing up their children healthy in body and mind. The description is a fitting and happy one, as it is a fact that without the aid of the State in thus doing their proper duty by their children, these mothers would have to work out for a livelihood,

and would find it impossible to give the children the care and attention they require if they are to grow up into useful citizens.

The "salaries" paid to these 150 mothers for the month of November amount to $7,028. Seventy-three of these mothers are within the boundaries of the City of Winnipeg. In St. Boniface there are 14, in the Municipality of Assiniboia, which includes the suburb of St. James, there are 11, while the remaining 52 are scattered over 30 municipalities of the Province. The average allowance to the Winnipeg mothers was $57.11, and the average to those outside the city is $37.13. The difference in allowances in the city and outside the city in the month of November was greater than in any previous month, due to the fact that the Winnipeg Committee asked for a substantial increase in the allowances on account of the extra expenditure for fuel, while few of the other municipalities asked for any increase at all on this account.

The Government recently appointed Miss Elizabeth Crawford, of the Extension Department of Manitoba Agricultural College, to the post of Investigator and Supervisor under the Mothers' Allowances Commission. Miss Crawford is trained in domestic science and is a practical housekeeper. Her duties at the present time are not only to investigate applications for allowances, but also to aid and teach the mothers who have not had the advantages now accorded their daughters in the public school system of the present day, for practical training and house management. Miss Crawford will make her first visits to country districts this month and will, in the course of the next few months, have visited every mother receiving allowance.

Seed Grain Fairs and Dressed Poultry Shows

Between 50 and 60 combined seed grain fairs and dressed poultry shows will be held in Manitoba between the middle of November and the middle of December.

Under the new Manitoba Agricultural Societies Act the prizes for the dressed poultry shows will be awarded on a new basis. Instead of the Department of Agriculture giving special prizes, as in the past, it will pay in cash 60 per cent. of the money actually awarded as prizes. In connection with the seed grain show it awards 66⅔ per cent.

The list of fairs is as follows:

Nov. 13—Ste. Rose (grain only)
Nov. 14—Swan Lake
Nov. 14—Glenella
Nov. 15—Plumas
Nov. 15—Holland
Nov. 15—Oak Lake
Nov. 16—Waskada
Nov. 16—Woodlands
Nov. 16—Elkhorn
Nov. 20—Reston
Nov. 20—Miniota
Nov. 20—Sanford
Nov. 21—Hamiota
Nov. 22—Hartney
Nov. 22—Oak River
Nov. 22—Treherne
Nov. 23—Rapid City
Nov. 23—Cypress River
Nov. 27—Melita
Nov. 27—Russell
Nov. 28—Deloraine
Nov. 28—Shellmouth
Nov. 28—Shoal Lake
Nov. 29—Boissevain
Nov. 29—Dugald
Nov. 29—Binscarth
Nov. 30—Cartwright
Nov. 30—Headingly
Nov. 30—Rossburn
Dec. 4—Morden
Dec. 4—Elgin (grain only)
Dec. 5—Manitou
Dec. 5—Stonewall
Dec. 6—Killarney (continued on 7th)
Dec. 6—Cypress River
Dec. 6—Wawanesa
Dec. 7—Minnedosa
Dec. 7—Glenboro
Dec. 7—Langruth (poultry only)
Dec. 7—Birtle
Dec. 7—Warren
Dec. 7—Strathclair
Dec. 7—Souris (continued on 8th)
Dec. 11—Roland
Dec. 11—Roblin
Dec. 11—Gladstone
Dec. 12—Miami
Dec. 12—Gilbert Plains
Dec. 13—McCreary
Dec. 13—Rivers
Dec. 14—Carman
Dec. 14—Kelwood
Dec. 14—Harding

Municipal Boundaries Changed

By proclamation dated November 9th, 1917, there was brought into effect chapters of an Act passed at the last session of the Legislature, amending "The Municipal Boundaries Act," by creating the new Municipality of Armstrong, and changing the boundaries of the Municipalities of Coldwell and Woodlands.

The new Municipality of Armstrong comprises townships 17, 18 and 19, whole or fractional, in ranges 1 and 2 west, lying east of Shoal Lake, and township 20 in ranges 1 and 2 west.

The amended boundaries of the Municipality of Coldwell show it now to comprise townships 18, 19 and 20, in ranges 3 and 4 west; township 20, in range 5 west; fractional townships 18 and 19, in range 5 west; fractional townships 19 and 20, in range 6 west, and fractional township 20, in range 7 west.

The amended boundaries of the Municipality of Woodlands show it to comprise townships 13, 14 and 15, whole or fractional, in ranges 1, 2, 3 and 4 west, and township 16, whole or fractional, in ranges 1 and 2 west, lying east of Shoal Lake, but not including any portion of Baie St. Paul and Poplar Point.

The new Municipality of Armstrong is designated a rural municipality within the Eastern Judicial District.

The Act provides that the present reeves and councillors constituting the respective councils of the rural Municipalities of Coldwell and Woodlands shall cease to hold office from and after the thirty-first day of December, 1917.

In the Northern Mining Camps

Developments in the mining districts north of The Pas since the last report of J. A. Campbell, Commissioner of Northern Manitoba, published in the August number of the *Bulletin*, are set forth in the following short article furnished by Mr. Campbell:

Flin Flon and Schist Lakes

The Provincial Government road between Sturgeon Landing and Lake Athapapuskow has been completed and a great deal of freighting is being done over it. The Mandy Mining Company have let a contract for hauling a minimum of 7,500 tons of copper ore to the Landing. This work will be done during the Winter months and it will be necessary to have about 250 teams on the job. Next Summer the ore will be transported by the Ross Navigation Company, by lake and river to The Pas.

In August Major Walter Karri-Davies, Henry C. Perkins and William Wallace Mein, prominent mining men from San Francisco and New York, visited Flin Flon property in company with John E. Hammill and John E. Black, members of the controlling syndicate, and as a result it was decided to put two more diamond drills in operation on there at once. Major Karri-Davies "wrote up" the trip in the *Mining and Scientific Press* of San Francisco, and the following is an extract from the editorial comment of that journal.

"Undoubtedly the discovery of large bodies of copper-sulphide ore in this part of Canada is a notable event. It is likely to lead not only to the development of one or two big mines, but it will furnish a new point of departure for intelligent exploration in a vast region full of possibilities. . . ."

"The presence of the precious metals in the copper lodes is of particular significance and encourages the expectation that a local mining industry of some importance may be established. American capital is participating in the development of the region and we venture to add that the Canadian people at this time are particularly friendly to enterprise originating from this side of a frontier on which no fort has been built or is ever likely to be built. Cordial co-operation is assured."

Wekusko of Herb Lake District

A good traffic road now connects Mile 82, Hudson Bay Railway, with the lake and a telephone line is being erected along it. The first freight taken over the new road was a saw mill for the Rex mine. Sawing was commenced immediately and as a result a large

frame mill house and other buildings have been erected at this camp. Most of the machinery previously referred to has been set up ready for the Winter work.

A mining deal of considerable magnitude has just been consummated whereby the Mines Exploration Syndicate, managed by Makeever Brothers have obtained control of the Elizabeth-Dauphin group. The transaction was put through with The Pas Consolidated Mines who have done considerable development work on the property during the Summer. This work has shown such promising results as to make it very attracti e to the Makeever syndicate who are now developing and operating the well known Rex camp. A great deal of money will be spent on this work in the near future and 60 to 70 men will be employed steadily during the Winter.

The "Syndicate" claims, about which there was considerable stir when they were located a few months ago, have recently passed into the hands of a Pittsburg capitalist and his associates who have had experienced men investigating mining conditions in the north for some time. This property shows a great deal of free gold, and is generally looked upon as a likely producer.

The results obtained in the northern mining district in the space of one year have been truly marvellous and those who know conditions best assert there are only small indications of what is to follow in succeeding years.

November, 1917.

Manitoba Farmers and Their Own Loan Organization

By A. R. Tomlinson, Secretary Manitoba Farm Loans Association

The Province of Manitoba has taken the initiative and put into operation the Manitoba Farm Loans Act, and the organization is so far advanced that applications for loans are now on file amounting to about two million dollars. The principal features of this Act are, that persons residing or intending to reside on land within the province may obtain loans up to fifty per cent. of the appraised value of farm land offered as first mortgage security, the rate of interest being six per cent. on the amount of unrepaid principal, repayment being made by equal annual payments composed of principal and interest extending over a period of thirty years with the provision that, at the end of the fifth year and thereafter, the balance of the principal sum still owing may be paid without giving notice or paying bonus; and it also provides that every borrower must subscribe for shares of the capital stock of the association to the amount of five per cent. of the sum borrowed, the same running concurrently with and being collateral to the loan, and none others but borrowers and the Province of Manitoba can hold such shares. The money loaned must be used to make improvements to increase productiveness or to pay off prior encumbrances on the land.

It is apparent that the inauguration of this progressive scheme to foster and encourage agriculture marks the inception of a new epoch for this the basic industry of Manitoba and in removing the shackles of burdening debt from the hands of the farmer, by supplying him with capital at a cost he can afford to pay and which leaves him the profit of his labors, it logically follows that what makes for his prosperity must better the conditions of every citizen in the province.

In the light of the world's instant need of greater production of foodstuffs and this country's need of economic readjustment, and which may become more critically necessary in the near future, there could be no time more opportune to set in motion such constructive machinery of fundamental importance and promise of universal benefit. On the other hand, owing to the practical closing of the financial markets from which this country has hitherto drawn its supply of money with the consequent high price that must be paid for funds, it would appear that the present moment is a most inopportune one to project this scheme.

A Co-operative Association—not a Profit-making Company

It is being asked whether, under existing money market conditions, the Manitoba Farm Loans Board can afford to loan money at six per cent. This question has a far greater meaning than appears on the surface, and must be looked at from different angles and receive broad consideration before being answered. Fortunately, with commendable foresight, as soon as it became assured that the Farm Loans Act was to be placed upon the statute books of the

province, the Government made arrangements for the preliminary financing of the project, resulting in the Farm Loans Board having funds now at its disposal sufficient to meet the requirements of present applicants, at a cost that enables the association to fulfil the promise of a six per cent. interest rate.

From the viewpoint of profit making, it might be argued that, in consideration of the present cost of money, the association could charge a higher rate on its present funds and be justified in so doing. But the Act stipulates that the rate of interest to be charged shall be such as will be sufficient to pay the interest on the securities issued to provide funds for making loans in addition to one per cent. per annum to provide for the expense of conducting business. With this provision in the Act it is observable that, should money market conditions continue as they now are, the rate might be raised, but the association is not justified in anticipating a possible future necessity which may or may not arise.

It must be understood that the association has a much higher function to perform than that ordinarily accredited to loan companies. It is an agency incorporated by a special Act to perform for the farmers of Manitoba a definite and responsible trust and in the performance of this trust to be so guided that the interests of agriculture are conserved and developed.

At this particular time, when every effort should be made to extend the operations of, and give encouragement to those engaged on the land, it would be neither prudent nor farsighted to conform to the usual practice of profit seeking institutions, and it must be borne in mind that this association is not created for a transient purpose or to fill a passing want, but is intended to give to agriculture better and more equitable financial facilities and the assurance to present and prospective settlers that their interests are of primal importance and shall receive the same consideration and protection as any other business or industry.

Every Borrower a Shareholder

In order that the farmers should have a truly representative institution and that they should have control of the same and receive all of the benefits accruing from its operation, it is provided that every borrower should become a stockholder by subscribing for shares in the capital stock of the association. This provision is the pivot of co-operative and equitable value of the scheme and assures to all borrowers at all times that the capital they require will be obtainable not at an interest cost consistent with the then prevailing money market conditions, but at a practically stable or average rate. If a farmer borrows at a period when the cost of money is abnormally high and the market cost is made the basis of a long term mortgage rate, it is inevitable that, owing to a fortuitous circumstance, he is penalized with a high charge extending over a long period of years. The farmer living alongside of him might happen to make a loan when money was cheap and there could be a difference of two per cent. in the rates of the respective borrowers. It will be seen in fixing what would, in normal times, be an average rate of interest, and making borrowers the owners of stock in the proportion of their borrowings, that in the event of favorable market conditions prevailing and the association thereby being enabled to dispose of its securities to advantage, the resultant profit would be equitably distributed to those who merit it. On the other hand, should conditions be such as at the present time, that the securities of the association could not be sold except at a loss, the shareholders would suffer to the extent of this deficit in the reduction of profits. Of course the distribution of dividends would be by reduction of the annual interest charge, and it is anticipated that when the association is well organized and the normal times of peace return a stable dividend will be established and a lower interest rate will thereby prevail. No principle could be fairer, and it certainly bespeaks a broad conception of the ultimate destiny of the project. It means that the farmers of Manitoba will have their own credit bank; will own and operate it in their own interests; will use their own money for their own purposes, and it must inevitably follow that a new dignity and attraction will be given to the industry of agriculture.

Will Tend to Standardize Interest Rates

Taking these features into consideration and looking not to the propitiousness of the moment, but to the present need, and which, if fulfilled, to its ultimate effect upon the great economic problems which will unquestionably arise in the near future when the organizations of war will have to be replaced by the organizations of peace, when business and industrial affairs will be undergoing change and the country will be in a more or less chaotic condition of reconstruction and readjustment, it would appear that the association

might take the broadest possible view in the conduct of its business, and if, in so doing it becomes necessary to capitalize for a short period an operating deficit, it is justified in so doing. The need of this may not arise, but if it does it will not be the Government or the taxpayers that will suffer, but merely result in what invariably happens in all business ventures, the postponement of profit distribution.

No thinking business man will deny that the investors in this enterprise, investing as they are in a sound and national project of constructive and universal moment, and being direct beneficiaries under the operation of the scheme, need have any undue concern about their investments. It might be pointed out that inasmuch as each shareholder's investment is only five per cent. of the amount of his borrowings, he can only suffer to the extent that the interest rate of his loan will be increased between one-quarter and one-third of one per cent. in the years he does not receive a dividend on his stock.

It would be a reasonable prophecy to make at this time, that the result of the abnormal industrial activity which has been going on in the United States for the last three years, with the consequent stupendous accumulation of wealth, and from the fact that the financial doors of that country are now closed and all the enormous national loans are being spent there by the Governments borrowing in procuring foodstuffs and materials of war—from which it must naturally follow that the money bags of our lending neighbor are still growing —that, with the cessation of hostilities and during the period of industrial readjustment the money market is likely to be glutted, and we in this country may be enabled to replenish our coffers at a cost that will soon offset any deficit that may have occurred. One thing the farmers of Manitoba can reflect on with complacent satisfaction is, that the machinery of their loan association will be working smoothly when the great rush of post-war requirements come, and it will be then that the wisdom of the present course will be understood and appreciated. No temporary difficulties or obstacles can have any effect on the ultimate success of the scheme, but will only tend to a better and more comprehensive knowledge of its far reaching benefits to all branches of the community.

The rural loan debt of the Province is estimated to be sixty million dollars, and there now are approximately fifty-six thousand farmers residing on the land, and it is safe to say that this number will be greatly increased in the near future. The tendency of returning soldiers will probably be back to the land, to enjoy the solace of peaceful landscapes and sunny prospects after the blare of battlefields and the entombment of trench and dugout. The haunting fear of the day when the mortgage comes due and the necessity for renewal at recurring intervals with the accompanying expense and invariably a jump in the interest rate is now removed, and the incentive to expansion of effort on the part of those who derive a living from the soil is both natural and certain. With the betterment of rural conditions, more men and women will be attracted from towns and cities, and it would be a conservative surmise to make that the financial requirements of the farmers will soon reach a hundred million dollars.

With this growth in view, the business of the Association will reach immense proportions, and with every upward step, by the ordinary laws of business, the cost of operation will gradually decline. If the local loan companies can operate for three-quarters of one per cent. of the invested fund, there is no reason, when the organization is well established, why this association should not administer its affairs at half that rate. It will not be done in the first year, nor yet in the second, but if the farmers continue to show the same interest and loyalty they now are doing, and money returns again to normal value, it will not take long thereafter to show more than encouraging results.

Administration Not Over Half Per Cent.

The history of Rural Credit or Farm Loan Associations in different countries will bear out the above supposition; the average cost of administration has been from one-quarter to one-half of one per cent., with the majority nearer the quarter than the half. There is another side to this question and one that is of interest and importance not so much to the farmer as the city dweller, and one which makes the principle of co-operation complete.

Farm mortgages have been a favorite field of investment for private individuals as well as companies organized for that purpose, but with the advent of this new plan the field will no doubt become restricted and a substitute will have to be found. The next

best thing to a farm mortgage is a farm mortgage bond, and while the interest return may not be so great, the security will remove any worry or fear, and always bring on the precise day it is expected the earnings of the investment. These bonds will eventually become the most popular form of investment in the Province.

Speculation in real estate by the small investor is a nightmare of the past. The savings of frugality have been sunk in unremunerative and taxable investments that, in a great majority of instances, will not be realized on for many years. The money that should be in constant circulation is tied up, not only to the detriment of the individual, but to business and the industries of the country. It is to these people that these securities will appeal, and it is to their wants that the association is catering by issuing short term bonds in small denominations. It is as essential, looking to the better upbuilding of the economic system, that the lending public should be given the same assistance and security as that which is being extended the borrowing public. Purchasers of these bonds will not only be safeguarded by the mortgages which are the direct underlying security, and the unconditional guarantee of the Government, but their investments will be forever free from any provincial, municipal, school or other taxation, except duties under "The Succession Duties Act." Undoubtedly the near future will call into being new forms of taxation, and the most likely ones will be the income and personal property taxes, and the fact that these bonds are forever exempt will give them an additional value.

Besides the opportunity of short term bond investments, the depositors of the Province, whose deposits aggregate many millions of dollars, may increase their earnings by one-third and incidentally have the arbitrary restriction removed which compels them to leave their money on deposit for certain periods or forfeit the interest.

The deposit certificates of the association are as negotiable as cheques and carry a promise that interest at four per cent. will be paid whether the money is left on deposit for one day or six months.

Nobody will fail to admit that the Manitoba Farm Loans Act is a tremendous step forward in the right direction, and that it only needs enthusiastic, capable and broad-minded administration to become at once a most effective piece of legislation for the strengthening of the economic system and the upbuiling of a bigger, better and brighter Manitoba.

There never was a time in the history of this country when the destiny of every individual pointed so clearly in the direction of new duties. Pre-war conditions will never again return; for the present everything is unstable and uncertain; the future calls for new plans to meet great changes; destruction must be followed by construction; everyone must be an active unit in the upbuilding of new and better systems, whether industrial, economic or social; and lasting results will only be obtained by following those two definite principles of guidance that stand out as the watchwords of war and the beacons of peace—"organization" and "co-operation." In the past we have trifled with these terms; we have organized for special privilege and monopolistic control and have created institutions that suck the life blood from the veins of the world's workers, and co-operation has been used as a bait to attract the unwary. But out of the world holocaust will emerge a new democracy born of sacrifice, that will demand the fruits of peace. Let nothing be done that will obstruct its fulfillment, but let us rather begin already to prepare the way.

TABLE

Showing the population of Manitoba and the number of Births, Deaths and Marriages for the seven years, 1910-1916

Year	*Population*	*Births*	*Deaths*	*Marriages*
1910	437,628	11,721	5,100	4,813
1911	465,614	13,407	5,238	5,177
1912	473,600	14,666	5,768	6,095
1913	498,391	16,424	5,919	5,985
1914	521,576	17,449	5,617	5,667
1915	531,096	17,832	5,379	5,064
1916	521,123	17,645	5,455	5,141
	3,439,228	109,144	38,476	37,942

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Edited by J. A. Macdonald, Publicity Commissioner. *Philip Purcell, King's Printer.*

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Dairy Production Increases

An increase of $1,412,016 in the value of dairy products from the farms and dairies of Manitoba for the year 1917 as compared with 1916 directs attention once more to the great strides made by this industry in the past few years. Statistics issued by Dairy Commissioner L. A. Gibson show that while a considerable part of the increase in value is due to higher prices received by the producer, there has been a very great increase in actual production, especially in the item of creamery butter. The increase in 1917 over 1916 was close to one million pounds, the figures showing 7,526,356 pounds for 1917 and 6,574,510 pounds for 1916. As against this, there is shown a decrease of 443,774 pounds in dairy butter, which is but one of the signs of the times and to a considerable extent the direct result of the work of the dairy section of the department of agriculture in educating the farmer to realize the increased profit there is in creamery butter. Cheese showed an increase of 213,159 pounds, with increase in total value of $52,434.

The increase in the output and value of creamery butter in Manitoba in the past six years is more than ordinarily significant, and is the best proof of the exceptional adaptibility of the Province to this particular industry. The following table tells the story:

	Pounds	Price per Lb.	Value
1912	2,936,138	28c	$ 820,718
1913	3,929,622	27.5c	1,080,646
1914	4,761,355	26.5c	1,261,759
1915	5,839,667	29c	1,693,503
1916	6,574,510	31c	2,058,109
1917	7,526,356	38.5c	2,897,647

The report of the dairy commissioner says that the increase in the output of creamery butter and cheese is most encouraging, particularly in view of the very heavy enlistment from the agricultural population which made the securing of satisfactory help on the farm very difficult and in many cases practically impossible.

During the year 1917 ninety carloads of creamery butter, totalling 2,000,000 pounds, have been exported from Manitoba to points both east and west. Manitoba butter has been in keen demand and has commanded the top market price wherever it could be supplied. It is steadily winning favor both for flavor and keeping qualities. When it is recalled that no longer ago than 1912 Manitoba was importing creamery butter, having brought in some 55 carloads in that year, the change is more than gratifying. It is a plain indication of the steady trend toward mixed farming. The increase in the output of dairy products is general over the whole of the Province, but is most noticeable in the district between Lakes Winnipeg and Manitoba.

Following is the complete statement of dairy products for the years 1917 and 1916, the latter being given for the purpose of comparison:

1917

Product	Pounds	Price	Total Value
Creamery Butter	7,526,356	38.5c	$2,897,647.06
Dairy Butter	3,979,515	31.0c	1,233,649.65
Cheese	1,093,887	20.2c	220,965.17
Total	12,599,758		$4,352,261.88
Milk	45,602,045	2.6c	1,185,653.17
Sweet Cream in lbs. Butter Fat	761,098	47.0c	357,716.06
			$5,895,631.11

1916

Product	Pounds	Price	Total Value
Creamery Butter	6,574,510	31.0c	$2,038,098.10
Dairy Butter	4,423,289	25.2c	1,115,995.65
Cheese	880,728	18.0c	158,531.04
Total	11,878,527		$3,312,624.79
Milk	45,401,043	2.2c	998,822.94
Sweet Cream in lbs. Butter Fat	478,242	36.0c	172,167.12
			$4,483,614.85

Greater Hog Production

That Manitoba is going to do her bit in increased food production, just as willingly and thoroughly as she has answered every other call to service in the great world struggle, is evident from the enthusiasm with which citizens have taken up the specific appeal for a greater supply of pork products. The nation-wide (it might well be called world-wide) effort for increased food production finds Manitoba in line with a determination that is bound to bring notable results.

Preliminary steps toward organization, taken by the Manitoba Department of Agriculture, after conferences with the Dominion Food Controller and the livestock department of the Dominion Department of Agriculture, came to a head at a conference held in the Legislative Chamber on November 29th. Present at the conference were representatives of the agricultural societies, the grain growers' associations, the livestock and dairy associations, the home economics societies and the boys' and girls' clubs, in addition to representatives of the agricultural and daily press, and the Dominion and Provincial Governments. The conference lasted a whole day, and was one of the most earnest and enthusiastic gatherings. A number of important resolutions were passed, following a definite decision to proceed at once with the organization of a Province-wide campaign, devoted primarily for the present to greater hog production. Representatives of the press pledged every effort toward the necessary publicity, and arrangements were made for a series of local conferences at many points throughout the Province, where speakers could meet directly with the farmers, and explain not only the great need and the duty incumbent upon every possible producer, but the methods which it had been decided to recommend.

Local Conferences

Following is a list of the local conferences, with the names of the organizers and speakers at each point:

Circuit No. 1—Speakers: President J. B. Reynolds, Manitoba Agricultural College, and W. I. Smale, Secretary Live Stock Association.

Virden	Tuesday, December 18th
Brandon	Wednesday, December 19th
Boissevain	Thursday, December 20th
Pilot Mound	Friday, December 21st

Circuit No. 2—Speakers: J. H. Evans, Acting Deputy Minister of Agriculture, and S. T. Newton, Director of Extension Service.

Carman	Friday, December 14th
Russell	Tuesday, December 18th
Neepawa	Wednesday, December 19th
Portage	Thursday, December 20th
Winnipeg	Friday, December 21st

Circuit No. 3—Speakers: Miss E. Cora Hind, Agricultural Editor *Manitoba Free Press*, and George Batho, Editor of *Agricultural Publications*, Department of Agriculture.

Roblin	Tuesday, December 18th
Dauphin	Wednesday, December 19th
Swan River	Friday, December 21st

Circuit No. 4—Speakers: W. W. Fraser, Provincial Livestock Commissioner, and J. D. Duthie Editor, *Canadian Thresherman*.

Morris	Tuesday, December 18th
Belmont	Wednesday, December 19th
Reston	Friday, December 21st

Circuit No. 5—Speakers: John Strachan and G. W. Wood, Professor of Animal Husbandry, Manitoba Agricultural College.

Glenboro	Wednesday, December 19th

Circuit No. 6—Speaker: Prof. G. W. Wood.

Rapid City	Wednesday, December 19th

RESOLUTIONS PASSED AT MAIN CONFERENCE

In connection with the following resolutions, passed at the Greater Hog Production Conference at Winnipeg on November 29th, it is worthy of note that every resolution passed without a single dissenting vote, and without any serious opposition in the preceding discussion. The resolutions are given in full:

Pledge of Support

"That this conference, representing the Agricultural Societies, the Grain Growers' Associations, the Livestock and Dairy Associations, the Home Economics Societies, and the Boys' and Girls' Clubs, realizes the seriousness of the food situation in regard to Britain and her allies, and the members pledge themselves to do their utmost to present the situation to the whole people, and to secure united action in increased livestock production, as in other measures recommended."—Carried by unanimous standing vote.

Farm Help

"That while the members of this conference are fully aware of the military necessity, yet we have been assured that the necessity of provisioning the allies and the allied armies is the paramount obligation of Canada; that, therefore, trained farmers, farmers' sons and farm help, in view of the food situation, are of greatest national service, if allowed to remain in their present occupations."

"That the labor crisis can be met only by the registration and organization of all labor resources, and that this should at once be proceeded with in the name of national service."

Feeds Branch

"That this conference commends the action of the Dominion Government in establishing a Feeds Branch, pursuant to the resolution of the Ottawa conference."

The previously passed resolution, which throws light on the purpose of this new branch, reads: "Your Special Committee herewith recommends that a Feeds Branch should be immediatly created, with an officer in charge, who is not only well informed on feeds and feed values, but who will further investigate the question, and who, by the use of various measures, will facilitate the distribution of feeds in Canada to the farmers, in a manner that will establish their confidence, will make available regular supplies of these feeds, will prevent adulteration, will carry on an educative campaign in respect to the purchase of the various grades of feed, and by these and other measures establish a confidence and permanency in the feed business, which is very necessary if the movement for the keeping and feeding of more hogs and other livestock on the farms of Canada is to become effective."

Appreciation of Banks' Action

"That the banks be commended for their policy of helping members of Boys' and Girls' Clubs to buy feeding stock, and that the policy be commended to all banks of the Province."

Pig Keeping in Towns and Villages

"That the municipal and town and village councils be requested to make it feasible for residents of towns and villages, under necessary supervision, to raise and feed pigs or other livestock."

Request for Co-operation of Organizations

"That the municipal councils, grain growers, agricultural societies, banks, railways and all other available agencies be called upon by this conference to work in the interests of increased hog production, and that the delegates at this conference be commissioned to present the needs to their own districts and to assist in organization."

Manitoba Department of Agriculture to Direct Propaganda

"That the Manitoba Department of Agriculture be recognized as the proper agency for the direction of this propaganda."

"That the Ministers of all Churches be urged to preach a sermon on food production."

Resolutions approving the appointment of H. S. Arkell as Live Stock Commissioner for Canada, and J. D. McGregor, as Food Controller for the Western Provinces, were passed.

THE NEED FOR GREATER PRODUCTION

The following outstanding points are taken from the address of President Reynolds of Manitoba Agricultural College, at the conference in the Legislative Chamber, on November 29th. They offer much food for thought for every Manitoba farmer, and show clearly that opportunity beckons not only to personal profit, but to what is so much more important, personal service at home, in the greatest struggle the world has ever known.

1. The war has caused a greater demand for meat.
2. There has been a wholesale slaughter of livestock in Europe to supply the demand.
3. The livestock industry has seriously declined on the continent of Europe in the last three years.
4. The submarines of Germany destroyed 923 British mercantile vessels in the first seven months of 1917.
5. The United Kingdom, previous to the war, had been procuring most of its meat supplies from distant countries—Argentine, New Zealand and Australia.
6. Owing to the destruction of British shipping, there has been almost a complete stoppage of meat supplies from distant countries.
7. At present, Great Britain and the allies are dependent almost entirely upon Canada and the United States for their meat imports.
8. Relatively to her population, area and opportunities, Canada's exports of livestock and of livestock products have been very small.
9. In cattle, sheep and swine, and their products of beef, mutton, bacon, hides, wool, milk, butter and cheese, prices are now ruling very high, and are likely to rule high for some time after the war.
10. Canada has the climate, the land areas, the railroads and water routes all favorable to a greatly increased livestock production. She has also the farmers who are skilled in breeding and feeding livestock.
11. The needs now are: Capital to enable some farmers to start in the livestock business, and others to enlarge their present operations; farm labor to help make mixed farming more general; a faith in the possibilities of agriculture and livestock raising, that will invite capital and labor and skill to the aid of a more intensified farming.

The war has created an extraordinary demand for beef, bacon and wool. Hence the need to maintain and to increase production of cattle, hogs and sheep.

The rations for British soldiers at the front are 1 pound of beef per day and 4 ounces of bacon. In peace times, the average consumption in Britain was one-fifth pound of beef and one-tenth pound of bacon.

In 1914 the imports of bacon to Great Britain were 5,098,080 hundred weights. These were increased by war demands in 1916 to 7,435,955 hundred weights.

Canada an Infant in Export of Livestock

Mexico has been exporting four and a half times as many cattle as Canada, Argentina five times as many sheep, and nearly four hundred times as much beef as Canada. Denmark has exported over four times as much pork, and pork products, and Australia 3,000 times, and New Zealand 4,000 times as much mutton.

Compared with those of the United States, Canada's exports have been: of beef and beef products, 1 to 90; of pork and pork products, 1 to 16; of mutton 1 to 70.

Decrease of British Imports from Distant Countries

In 1914, Argentina supplied Britain with 5,993,126 hundred weights of beef. This year, 1917, Argentina is practically off the British market because of the shortage of shipping, and the decline of imports from Australia and New Zealand is even more marked.

How these imports have fallen off is shown by the figures for the first two months of the year:

	January and February		
	1915 Cwt.	1916 Cwt.	1917 Cwt.
Argentina	474,697	617,744	349,138
Australia	294,939	23,343	49,436
New Zealand	114,327	109,709	85,737

The Submarine

923 British vessels have been sunk in six and a half months. Since February 1st, 1917, 2,000,000 tonnage, or about one-tenth of the total British mercantile marine, has been sunk.

Period	Vessels Sunk 1,600 tons and over	Under 1,600 tons	Fishing Vessels	Total
Feb. 1-17	46	27	26	99
Week ending Feb. 25	15	6	3	24
March	61	25	37	123
April	132	52	41	225
May	78	40	24	142
June	85	25	11	121
July	82	18	27	127
July 27 to Aug. 18	50	7	5	62
	549	200	174	923

These figures sufficiently explain why Britain has been unable to carry mutton and beef from Argentina, Australia and New Zealand. She has not ships to spare for the long haulage. She must look to Canada and the United States for beef and bacon, as well as wheat.

How much Great Britain is dependent upon the beef supplies of North America is shown by the increased imports from the United States for January-February in three successive years:

	1914-15 Cwt.	1915-16 Cwt.	1916-17 Cwt.
United States	39,983	94,287	150,538

The total British imports for the same months show a serious decline:

	1914-15 Cwt.	1915-16 Cwt.	1916-17 Cwt.
Total	981,234	919,761	696,736

Britain, for the period of the war, will be dependent upon Canada and the United States for practically all her imports of meat. And after the war, until shipping is restored to its normal tonnage, Europe will be largely dependent upon us for livestock and livestock products.

Decrease in Supply of Livestock in Europe

"A total decrease of 115,005,000 head in the world's meat producing animals is shown in a comparison of present with pre-war conditions made up as follows:

	Number of Head Decrease
Cattle	28,080,000
Sheep	54,500,000
Swine	32,425,000
Total	115,005,000

"Europe has been eating into its herds at an alarming rate, and this condition will continue to grow worse. The world's supply of meat and dairy products, of animals fats, wool and hides are all involved, not only now, but far into the future.

"We can contemplate a high range of prices for meat and for animal products for many years to come."—Herbert C. Hoover, United States Food Controller.

How Canada Stands in Live Stock Production and Export

Canada, which claims to be mainly an agricultural country, covering nearly half a continent, produces one-sixteenth of the world's supply of wheat. In livestock products she has managed to do little more than supply her own needs. With one-twelfth the population of the United States, Canada's exports of beef and beef products in 1912 were one-ninetieth of those of the United States; of pork and pork products, one-sixteenth; of mutton, one-seventieth.

In response to the needs of the allies, and to make up the shortage from other sources, Canada has increased her exports to Europe very greatly since 1914.

But that has been *done at the expense of her own capital supply.*

Our Canadian Herds are Decreasing

	1914 Animals	1917 Animals	Decrease
Milch Cows	2,673,000	2,642,000	31,000
Other Cattle	3,363,000	3,325,000	38,000
Sheep	2,058,000	2,009,000	49,000
Swine	3,434,000	2,513,000	921,000

The heavy consumption of meat is in English-speaking countries.

The meat consumption per capita in normal times, for some of the principal countries of the world, is as follows:

Annual Per Capita Consumption of Meat

	Lbs. Per Year
Australia	260
New Zealand	210
United States	170
Canada	140
United Kingdom	120
France	80
Belgium	70
Russia	60
Italy	45
Germany	115
Austro-Hungary	65

Average, about 93 pounds

In the United States the consumption decreased from 181 pounds in 1900 to 171 pounds in 1909. This saving of consumption, by a population of 100,000,000, would amount to 1,000,000,000 pounds, of more than one-fourth of the total meat exports of the world.

In Canada for the same period we had an increase of meat consumption from 109 pounds to 137 pounds. This increase amounts to 230,000,000 pounds a year, or three times the total meat exports of Canada for 1912.

Butter Competition

The Manitoba Dairy Association will hold the largest convention in its history at the Fort Garry Hotel, Winnipeg, on January 31st to February 1st.

The program is an unusually strong one, including a banquet at the Fort Garry Hotel. However, the most important feature of the convention is the butter competition, in which there are over 200 samples of butter of 14 pounds each entered, and for which prizes aggregating $800.00 are offered.

This is the first competition of this nature that has been held in the Province. Beginning last June, creameries entering this competition shipped a sample box each month during June, July, August, September and October, into cold storage at Winnipeg. These boxes of butter will be judged at the convention, and then the three winning samples will go into competition with samples from Alberta and Saskatchewan that have also won in their provincial competitions.

The judges deciding these competitions come from Montreal and Vancouver, and will judge the samples according to the needs for the export trade to these points.

This will be the first provincial butter competition to be held in Manitoba, and also the first inter-provincial competition to be held in Western Canada, and coming at this time when butter prices are high, as well as every other commodity, this competition and the convention are attracting an unusually large number of people, who are interested either in butter-making or in production of milk, cream and butter.

Special railway fares will be arranged from all points in the Province, and the convention, as noted, is being held in the Fort Garry Hotel, Winnipeg. The committee in charge of the program is making arrangements to handle a large convention, and anyone desirous of attending same, and who wish for further particulars, should write to L. A. Gibson, Dairy Commissioner, Winnipeg.

Annual Short Course in Farm Engineering

For ten years short courses in farm engineering have been given by Manitoba Agricultural College. The eleventh annual course is now announced. This begins January 15th and continues for two months.

Speaking of the value of the course, Prof. L. J. Smith says: "The experience in this Province and elsewhere with tractors, and especially with gas tractors, is that it is almost folly for an inexperienced man to expect to get satisfactory returns for his investment in a tractor, when the operator does not thoroughly understand his machine. He will lose money from time being lost unnecessarily, from uncalled for breakages and depreciation, and through loss in power and fuel economy, because of his lack of knowledge as to how best to handle his expensive investment. We have for the past ten years been giving short courses for the purpose of helping the engine operator. The money spent on such a course will be saved many times in a season by the knowledge and experience gained."

The course is devoted not only to engineering, but also takes up such subjects as forge shop work, farm mechanics, concrete construction, building construction, farm machinery and physics.

Applications to be enrolled in this course have come in unusually early this season, about twenty students having applied more than two months before the course opens.

Short Course Schools

There has been a much increased demand this year for short course schools at rural points throughout the Province, so much in fact that the Extension Service Department found it necessary to commence operations earlier than usual. Two schools opened on November 26th, one at Kenton and one at Morden, while three others at Crystal City, Melita and Plumas opened on December 11th, and closed December 22nd. To each school a full carload of equipment is taken, consisting of machinery and other supplies.

The following particulars concerning these short courses is supplied by the Agricultural Extension Service Department:

Live Stock—For the live stock instruction there has been made three dozen 16x20-inch enlarged bromides of prize-winning types of live stock, which will be used for the class-room lectures. Also the best herds in the district will be used for practical work in judging.

Field Crops—For field husbandry, work cans are provided, containing a supply of all the grains grown in Manitoba, as well as mounted specimens of diseased plants. It is a safe prophecy that cleaner grain will be grown next year, at every point where a Short Course School is held. This prediction is based on the fact that a power grain cleaner is included in the field husbandry equipment, and this will be operated by one of the demonstrators on gas engines, thus providing a practical application of the instruction given. Farmers who wish to do so may bring in all their seed grain, and have it cleaned and ready for an early start in the Spring.

Gas Engines—For the gas engine work the various engine companies in Winnipeg have very generously donated over $20,000 worth of equipment, including gas engines, magnetos, coils, carburetors, etc. The engines are divided among the various circuits as follows:

Circuit No. 1

One 10-20 Mogul Tractor, single cylinder.
One 10-20 Case Tractor, four cylinder.
One 2 h.p. Hercules Stationary Engine.
One 8-16 Avery Tractor, two cylinder.
One 3 h.p. Eaton Stationary Engine.
One 1½ h.p. Mogul Stationary Engine.
One 2½ h.p. Fairbanks Stationary Engine.

Circuit No. 2

One 12-24 Waterloo Boy Tractor, two cylinder.
One 9-18 Case Tractor, four cylinder.
One 1½ h.p. Gould, Shapley & Muir, Stationary.
One 12-20 Heider Tractor, four cylinder.
One 2 h.p. Waterloo Boy, Stationary.
One 2 h.p. Hercules, Stationary.
One 3 h.p. Eaton Stationary.

Circuit No. 3

One 12-20 Heider Tractor, four cylinder.
One 10-20 Titan Tractor, two cylinder.
One 1¾ h.p. Mogul Stationary.
One 15-30 Minneapolis Tractor, four cylinder.
One 3 h.p. Judson, Stationary.
One 3 h.p. Eaton, Stationary.
One 2 h.p. Galloway, Stationary.

Lighting Systems—As a large number of farmers are installing lighting systems, a fully equipped lighting plant is included in the equipment for each circuit, and lectures and demonstrations will be given on the installation, care and operation of these plants.

Classes in Dressmaking, Millinery, Cookery and Home Nursing are provided for the women, but the course is so planned that the women will be able to take advantage of the lectures in gas engine operation, as well as the lectures on lighting.

At a number of points additional lectures in poultry raising and dairying will be given

The circuits and dates are as follows:

	Circuit 1	Circuit 2	Circuit 3
Nov. 26 to Dec. 7	Morden	Kenton	
Dec. 11 to Dec. 22	Crystal City	Melita	Plumas
Jan. 1 to Jan. 12	Virden	Reston	Grand View
Jan. 15 to Jan. 26	Carberry	Souris	Russell
Jan. 29 to Feb. 9	Langruth	Hartney	Rossburn
Feb. 12 to Feb. 23	(Farmers' Week at Winnipeg)		Glenella
Feb. 25 to Mar. 8	Portage la Prairie	Roland	Neepawa

The lecturers for the various circuits are as follows:

	Circuit 1	Circuit 2	Circuit 3
Live Stock	Geo. H. Jones	Geo. H. Jones	J. R. Bell
	A. J. Mackay	A. J. Mackay	K. McGregor
Field Crops	J. H. Kiteley	E. G. Wood	A. J. McGregor
Gas. Engines	D. R. A. Drummond	A. C. Campbell	W. Smyth
	E. Kincaid	W. Ferguson	T. E. Allen
Home Nursing	Miss L. Clarke	Miss Winram	Miss E. Winram
Cookery	Miss R. M. Atkinson	Miss Atkinson	Miss Mitchell
Dressmaking	Miss M. Smith	Miss C. Senior	Miss E. Blackburn
Millinery		Miss E. Blackburn	

Special Work Between the Lakes

In the new country between Lakes Winnipeg and Manitoba, where many thousands of homesteaders have settled during the past few years, a special line of work will be carried on. In this territory the school houses will be visited by a smaller staff of workers, who will move from point to point each day or two. The instruction here will be confined to four branches: dairying, live stock work and bee-keeping, in charge of Messrs. R. M. Muckle and D. E. McKenzie, and home economics by some lady member of the staff.

The Feed Supply

The Provincial Department of Agriculture is acting as agent in the Dominion campaign for the supply of feed for livestock in this Province. The campaign was inaugurated jointly by the Dominion Food Controller, and the livestock branch of the Dominion Department of Agriculture, and the object is to facilitate the delivery of supplies of needed feed to all producers who find themselves short of the necessary supply owing to crop failure or any other cause. Time will be saved therefore if any farmer requiring feed will communicate direct with the Provincial Department of Agriculture, Parliament Buildings, Winnipeg.

Statistics of 1917 Production

(From the Reports of the Department of Agriculture and Immigration on Crops, Live Stock, Etc.)

WHEAT

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	600,963	19.5	11,718,778
South-Western	748,288	9.3	6,959,078
North-Central	544,434	19.1	10,398,689
South-Central	566,629	11.2	6,346,244
Eastern	390,039	18.5	7,215,721
Fall Wheat	3,009	16.8	50,551
Total	2,853,362	14.9	42,689,061
1916	2,994,529	10.1	30,439,600

OATS

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	729,443	33.6	24,509,284
South-Western	429,639	17.8	7,647,574
North-Central	358,921	36	12,921,156
South-Central	375,011	19.4	7,275,213
Eastern	336,991	32.7	11,019,605
Total	2,230,005	28.4	63,372,832
1916	2,062,411	32.8	67,729,922

BARLEY

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	301,284	23.7	7,140,430
South-Western	205,834	13.8	2,840,509
North-Central	245,994	25.6	6,297,446
South-Central	294,493	14.5	4,270,148
Eastern	223,119	24.5	5,466,415
Total	1,270,724	20.4	26,014,948
1916	1,153,660	20.9	24,116,141

FLAX

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	8,298	9.7	80,491
South-Western	18,890	6.3	119,007
North-Central	15,011	10.3	154,613
South-Central	8,812	8.2	72,258
Eastern	12,594	10	125,940
Total	63,605	8.6	552,309
1916	55,608	10.5	587,635

FALL RYE

District	Area in Crop, Acres	Average Yield, Bushels, Per Acre	Total Yield, Bushels
North-Western	2,981	20.7	61,707
South-Western	15,936	10.9	173,702
North-Central	4,299	22.6	97,157
South-Central	11,193	14.3	160,060
Eastern	20,338	18.4	374,219
Total	54,747	15.8	866,845

SPRING RYE

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	2,850	18	51,300
South-Western	6,304	11.5	72,496
North-Central	7,751	20.5	158,896
South-Central	4,660	14.7	68,502
Eastern	4,301	18.2	78,278
Total	25,866	16.6	429,472
1916 Fall and Spring	32,559	19.4	633,371

PEAS

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	941	21.2	19,949
South-Western	140	9.6	1,344
North-Central	565	11.4	6,441
South-Central	271	7	1,897
Eastern	1,971	14.9	29,368
Total	3,888	15.1	58,999
1916	3,112	14.5	45,231

POTATOES

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	14,587	114.7	1,671,982
South-Western	5,621	71.6	402,464
North-Central	14,289	126.7	1,810,416
South-Central	6,278	69.1	433,810
Eastern	25,319	117.5	2,974,983
Total	66,084	110.3	7,293,655
1916	62,581	145.1	9,080,602

ROOTS

District	Area in Crop, Acres	Average Yield, Bushels Per Acre	Total Yield, Bushels
North-Western	3,777	167.2	631,514
South-Western	1,601	85	136,085
North-Central	4,426	199	880,774
South-Central	1,450	99.7	144,565
Eastern	5,328	176	937,728
Total	16,582	164.6	2,730,666
1916	18,561	207.3	3,849,132

BROME GRASS

District	Area in Crop, Acres	Average Yield, Tons Per Acre	Total Yield, Tons
North-Western	4,784	1.4	6,698
South-Western	6,807	1.1	7,488
North-Central	3,924	1.6	6,278
South-Central	16,145	1	16,145
Eastern	6,043	1.3	7,856
Total	37,703	1.1	44,465
1916	28,753	1.8	51,822

RYE GRASS

District	Area in Crop, Acres	Average Yield, Tons Per Acre	Total Yield, Tons
North-Western	4,138	1.2	4,966
South-Western	7,738	1.1	8,512
North-Central	4,183	1.6	6,693
South-Central	7,664	1.	7,664
Eastern	4,078	1.3	5,301
Total	27,801	1.2	33,136
1916	20,190	1.7	36,163

TIMOTHY

District	Area in Crop, Acres	Average Yield, Tons Per Acre	Total Yield, Tons
North-Western	19,088	1.2	22,906
South-Western	3,487	1.1	3,836
North-Central	17,356	1.6	27,770
South-Central	36,411	.8	29,129
Eastern	38,620	1.2	46,344
Total	114,962	1.1	129,985
1916	103,117	1.6	169,368

CLOVER

District	Area in Crop, Acres	Average Yield, Tons Per Acre	Total Yield, Tons
North-Western	1,306	1.2	1,567
South-Western	174	1.	174
North-Central	1,122	1.4	1,571
South-Central	93	1.	93
Eastern	5,562	1.2	6,674
Total	8,257	1.2	10,079
1916	6,951	2.	10,245

ALFALFA

District	Area in Crop, Acres	Average Yield, Tons Per Acre	Total Yield, Tons
North-Western	1,084	1.8	1,951
South-Western	1,198	1.2	1,438
North-Central	949	1.7	1,613
South-Central	422	1.2	506
Eastern	2,351	1.4	3,921
Total	6,004	1.5	9,429
1916	6,395	2.3	15,115

FODDER CORN

District	Area in Crop, Acres	Average Yield, Tons Per Acre	Total Yield, Tons
North-Western	5,916	3.9	23,072
South-Western	6,938	3.	20,814
North-Central	9,318	4.9	45,658
South-Central	4,292	3.7	15,880
Eastern	7,636	4.1	31,308
Total	34,100	4.	136,732
1916	34,960	5.8	204,955

DAIRY BUTTER

	Pounds	Price Per Pound	Total Value
North-Western	1,195,617	32c	$382,597.44
South-Western	328,725	32c	105,192.00
North-Central	758,103	31c	235,011.93
South-Central	496,860	32c	158,995.20
Eastern	1,200,210	30c	360,063.00
Total	3,979,515	31c	$1,241,859.57
1916	4,423,289	25c	$1,115,995.65

POULTRY DISPOSED OF BY FARMERS

District	Turkeys	Geese	Chickens	Ducks	Price Eggs Per Doz.
North-Western	16,242	9,663	109,940	12,069	30c
South-Western	21,464	6,844	118,138	15,100	29c
North-Central	20,100	10,283	121,628	11,647	29c
South-Central	13,578	6,845	107,498	9,288	30c
Eastern	24,064	13,329	240,152	20,276	31c
Total	95,448	46,964	697,356	68,380	
1916	101,867	54,843	722,864	74,427	

POULTRY WINTERED OVER

	Turkeys	Geese	Chickens	Ducks
North-Western	4,860	3,030	186,135	4,609
South-Western	6,414	2,424	162,448	4,810
North-Central	11,440	2,564	198,478	4,821
South-Central	4,757	2,278	173,948	3,254
Eastern	6,797	6,053	258,600	7,312
Totals	34,268	16,349	979,609	24,806
1916	31,621	18,501	912,684	23,847

DAMAGED BY HAIL

District	Acres Destroyed	Partially Destroyed
North-Western	290	2,414
South-Western	2,050	21,757
North-Central	.....	727
South-Central	1,804	17,450
Eastern	3,202	18,893
Total	7,346	61,241
1916	56,433	136,648

INCREASE IN LIVE STOCK BY BIRTH

District	No. of Foals	No. of Calves	No. of Lambs	No. of Pigs (Young)
North Western	10,350	49,986	9,353	64,513
South Western	10,892	24,805	12,843	36,606
North Central	7,149	33,825	6,803	41,444
South Central	7,101	29,249	9,817	47,233
Eastern	9,565	47,516	17,036	55,276
Total	45,057	185,381	55,852	245,072
1916	33,769	146,844	48,689	220,121

FARM HELP

District	Males Summer Prior Harvest	Males Harvest and Fall	Average Wages Summer Months	Average Wages Harvest and Fall
North Western	4,582	9,085	45.00	65.00
South Western	2,789	5,804	47.00	74.00
North Central	2,737	7,553	46.00	66.00
South Central	2,497	5,497	45.00	68.00
Eastern	3,740	8,952	42.00	59.00
Total	16,345	36,891		

FARM DOMESTICS

District	Number of Domestics	Wages of Domestics
North Western	1,522	$20.00
South Western	827	24.00
North Central	793	22.00
South Central	821	21.00
Eastern	1,154	21.00
Total	5,117	

LAND PREPARED FOR CROP OF 1918

District	Breaking Acres	Summer Fallow Acres	Fall Ploughing Acres
North Western	31,197	371,451	214,399
South Western	5,718	383,344	141,337
North Central	26,846	192,614	347,921
South Central	12,281	195,022	364,297
Eastern	29,855	238,877	358,444
Total	105,897	1,381,308	1,426,398
1916	90,113	1,235,052	1,846,661

MISCELLANEOUS

District	Threshing Outfits	Buildings Dollars	Price Culti-vated Land	Price Wild Land
North Western	1,492	773,076	$27.00	$12.00
South Western	1,042	255,910	30.00	10.00
North Central	695	509,493	31.00	16.00
South Central	977	345,835	31.00	17.00
Eastern	806	734,701	30.00	18.00
Totals	5,012	2,619,015		
1916	4,617	2,623,334		

Public Welfare Commission

The Manitoba Public Welfare Commission is the name adopted by the commission appointed by order-in-council of the Government, to carry out the provisions of an Act passed at the last session of the Legislature, which was entitled "An Act Respecting Public and Other Institutions." The members of the commission are: Hon. Thos. H. Johnson, D. B. Harkness, secretary of the Social Service Council; H. J. Symington, K.C., barrister; Mrs. Winnifred L. Copeland; Miss Ethel Johns, matron of the Children's Hospital; Robert Fork, of Pipestone, secretary of the Manitoba Union of Municipalities; Dr. A. T. Mathers; John M. Thompson, manager of Beatty Bros. Ltd.; and W. J. Fulton, manager of the Dominion Radiator Company.

The Act confers upon the commission the power and authority to inquire into and report upon all matters and things respecting the establishment, controlling, financing and management of the institutions and organizations, and other things and matters which are more specifically mentioned. The commission has the power to summon witnesses and require them to give evidence under oath, and to produce documents.

Duties of the Commission

The order-in-council specifically confers upon the commission power and authority to inquire into and report on the several public institutions of the Province comprising: hospitals for the insane, the Industrial Training School, the Manitoba School for the Deaf, the Old Folks Home, the gaols, and such institutions as are or may hereafter be established for the care and education of the feeble-minded, or for other purposes; also of charitable or benevolent institutions or organizations, public or private hospitals, houses of refuge, infants' or children's homes, nursing homes, and all other kinds of institutions and organizations having for their object the care of men, women and children, whether such institutions or organizations are or are not supported or aided in whole or in part by provincial or municipal funds or otherwise.

The commission is charged to investigate and report on the conditions under which, in their opinion, provincial, municipal or other aid should be given to institutions or organizations of the character mentioned; to report on the duplication of work of such institutions or organization, and the efficiency of their organization and administration, with a view to formulating methods for greater co-operation between such institutions and organizations, and for their general improvement.

The commission is also charged to investigate and report on the laws at present in force in the Province, relating to charitable and benevolent organizations, and to make recommendations for the amendment of the same, also to suggest amendments for the improvement of the Charity Aid Act.

The commission has taken quarters in the New Parliament Buildings.